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ARTERIAL OCCLUSIONS SIMULATING NEUROLOGICAL DISORDERS OF THE LOWER LIMBS

R. S. Gilfillan, M.D., O. W. Jones Jr., M.D., S. I. Roland, M.D.
and
E. J. Wylie, M.D., San Francisco

The veterinarian Boullay first described the syndrome of intermittent claudication as early as 1831.[1] In 1858, Jean Marie Charcot described lameness and pain of claudication in horses pulling carriages. His description of a patient with an aneurysm of the common iliac artery was the first that gave an accurate and comprehensive survey of the clinical picture of pain due to vascular insufficiency in the lower extremity of man.[2] Failure of circulation to specific muscle groups and the appearance of sensory changes during exercise are only of relatively recent recognition. Where unusual types of claudication and ischemic hypesthesia appear, they are often confused with neurological syndromes. It is the purpose of this paper to describe several types of pain and sensory changes arising in arterial disease of the lower extremity that manifest a strong resemblance to primary neurological disease and to present illustrative case histories.

TYPES OF PAIN

It is possible, with some degree of accuracy, to group the major varieties of claudication pain in the lower extremity and hip according to the area of vascular occlusion. While several types are well known, such as the symptom of calf pain on exercise that is associated with obstruction of the superficial femoral or femoral-popliteal artery, there are other fairly well-defined syndromes that are not so well known.[3]

Terminal Aortic Obstruction.—If the terminal aorta or aortic bifurcation area is obstructed, one may see the Leriche syndrome [4] characterized by global atrophy in the lower extremities including the buttocks, impotency or difficulty in maintaining an erection, and intense fatigue and muscular weakness of the lower extremities. In this type of patient, if he is forced to walk, severe pain may develop in the buttocks, thighs, and legs usually in this order. Often only the parietal branches of the lower aorta are obstructed, and one may see lumbar and hip pain that may be bilateral or unilateral and related to exercise, but this relationship is difficult to elicit and, therefore, not often brought to attention.

Total Iliac Obstruction.—In total iliac artery obstruction, the patient usually has pain commencing in the low buttocks and extending into the thigh and then to the calf on the affected side. The close resemblance of the pain distribution of total iliac artery occlusion to pain secondary to nerve root irritation in the low lumbar and sacral levels has given rise to the major difficulty in making this differential diagnosis.

Partial Iliac Obstruction.—In 1953, Gilfillan, Steinfeld, and Leeds [5] described a syndrome of pain on exercise associated with partial iliac artery occlusion. This syndrome included a systolic bruit over the involved artery and claudication pain commencing in the calf and proceeding to the thigh and buttock secondarily. Patients with partial iliac occlusion also were noted to lose their pedal pulses after and during exercise.

Femoral Profunda Obstruction.—In femoral profunda obstruction, a rare type of arterial obstruction, the patient usually has pain in the anterior and medial aspect of the affected thigh. The anterior surface may not be involved, since in 18% of these cases the lateral circumflex femoral artery originates from the common femoral artery and may, therefore, not be affected in occlusion of the femoral profunda artery, its usual source of origin.[3]

Superficial Femoral or Femoral-Popliteal Occlusion.—Obstruction of the superficial femoral artery is the cause of a well-known type of claudication pain. That pain occurs primarily in the calf and popliteal area.[6]

From the departments of surgery (Drs. Gilfillan and Wylie) and neurological surgery (Dr. Jones), University of California School of Medicine, and Assistant Resident in Surgery, Franklin Hospital (Dr. Roland).

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5. Gilfillan, R. S.; Steinfeld, J. L., and Leeds, F. H.: The Syndrome of Peripheral Vascular Insufficiency with Partial Iliac Artery Occlusion, Surgery, to be published.
6. Lewis, T.; Pickering, C. W., and Rothschild, P.: Observations upon Muscular Pain in Intermittent Claudication, Heart **15**: 359, 1931.

REPORT OF CASES

CASE 1.—A 47-year-old Negro hod carrier dated the onset of his symptoms to a time five months before this examination when he was carrying some heavy scaffolding and first noticed back pain. On assuming the erect position after bending, his back was painful, and coughing, straining, or working at his trade increased the back and gluteal pain. He was treated for a derangement of a low lumbar intervertebral disk with taping of his back, local injections of anesthetic, leg traction, and body

Fig. 1 (case 1).—Aortogram showing complete occlusion of the left common iliac artery.

plaster. This treatment was followed by almost complete recovery. Roentgenograms taken at that time showed nothing significantly abnormal. Approximately two weeks after the patient's recovery from this injury, he noted the development of a dull low back pain radiating down the back of both thighs to his toes with temporary numbness of his left foot, especially the plantar surface and digits, the fourth and fifth. After two or three blocks of walking on a level surface he had to rest and found that after rest the pain was almost gone, except for a residual soreness in the anterior aspect of his left leg. Taping of the low back, traction, and injections were repeated without avail. At the time of our observation there were no abnormal neurological findings. The man had a full range of motion in all extremities. It was ascertained that arterial pulsations were absent below the aortic level on the left and below the common femoral artery on the right. A myelogram was entirely normal. A claudication test consisting of walking 120 paces per minute on level ground resulted in pain in the left hip in 20 seconds, in the left calf in 40 seconds, and a limp and severe pain in the left hip and calf in 50 seconds so that further ambulation was difficult. After two minutes of standing rest, the pain was gone and the man was able to repeat the same performance, except for the return of pain in a shorter time. At the height of the pain, the patient had numbness of the entire left calf and foot that lasted for 10 minutes after cessation of exercise. Oscillometry showed markedly depressed pulsations bilaterally in both thighs and calves. A reflex vasodilatation test illustrated a marked failure of peripheral circulation in the left lower extremity and, to a lesser degree, in the right. An aortogram was carried out with 40 cc. of 70% iodopyracet (Diodrast). This demonstrated a complete occlusion of the left common iliac artery above the level of the hypogastric (fig. 1 and 2). Below this level the collateral circulation filled the left femoral artery and the distal system, although it was delayed. The right iliac and femoral arteries filled well throughout. It was concluded that the patient's symptoms could be completely accounted for by the atherosclerotic vascular disease.

CASE 2.—This 46-year-old roofer fell from a 20 ft. (6.1 m.) height, lost consciousness for several minutes, and received some minor injuries, including a hematoma from a ruptured penile vein. The hematoma was absorbed within a week, and the man was otherwise well and able to resume his work. Several weeks after this accident, calf, thigh, and low back pain developed in this order, and numbness below both knees occurred after walking three to five blocks. It took from 15 to 60 seconds before he was able to resume walking without pain. When not at work or walking he had no symptoms. His history otherwise was noncontributory. The patient was seen in neurological consultation, and the diagnosis of a herniated intervertebral disk was considered.

On physical examination by our group, no abnormal neurological phenomena were found. The patient had a normal aortic pulsation with slightly diminished left femoral, dorsal pedal, and posterior tibial pulses. A soft systolic bruit was heard over both common iliac arteries. The femoral pulsations bilaterally were markedly weaker than the pulsation of the carotid artery. Both feet were cool and pale but did not blanch on elevation. An aortogram made with 40 cc. of 70% iodopyracet revealed tortuosity of the terminal 5 cm. of aorta and proximal 3 cm. of both common iliac arteries, with an

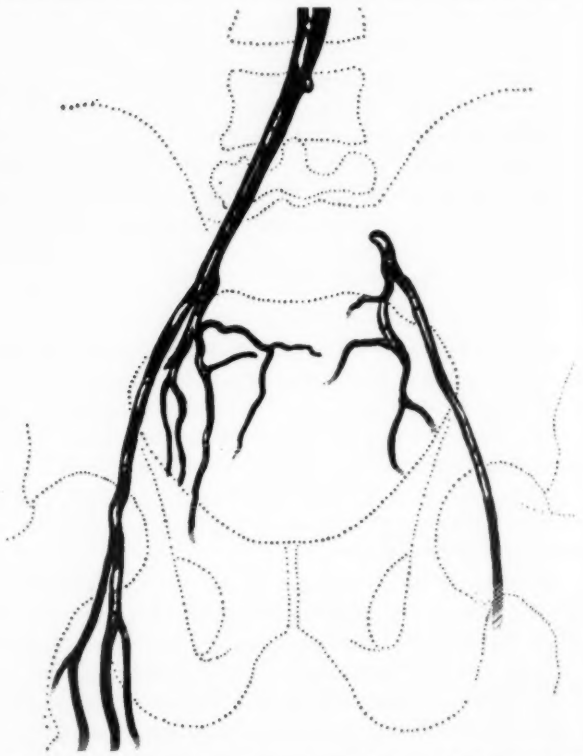

Fig. 2 (case 1).—Drawing of complete occlusion of left common iliac artery shown in figure 1.

area of marked narrowing of both common iliac arteries approximately 3 cm. from the aortic bifurcation (fig. 3).

A bilateral lumbar sympathectomy of the second, third, and fourth lumbar ganglions was done with no change in the physical signs other than the production of warm, dry feet and legs. There was a gradual improvement in symptoms.

CASE 3.—A 52-year-old man went over a cliff embankment in a truck and received a small laceration of the frontotemporal scalp area. He was not unconscious at any time, and

after one day's hospitalization he returned to work. After two weeks of his usual work, he became aware of numbness in his perineum and lower limbs and sacroiliac pain. He was hospitalized again. He underwent myelogram studies and x-ray and neurological examinations, all of which were normal. During this hospitalization of three months, he was treated with leg traction and physiotherapy with no beneficial results and no change in symptoms. For the next 10 months he remained at home receiving physiotherapy and mild sedation. He was again hospitalized for two weeks, at which time another myelogram was made as well as a pneumoencephalogram and electroencephalogram, all of which were normal. At this time his complaints were of dull pain in the lower back, numbness in the perineum and lower extremities after walking two or three blocks, some atrophy of the muscles of the left thigh and leg, pain in the left shoulder, heavy dull pain in the left hip, thigh, and calf on walking as little as one-half block with rapid cessation of pain on resting, and impotency for the past three and a half years, with its onset one year prior to his injury.

On physical examination it was found that the right axillary, brachial, radial, and ulnar pulses were absent, as were the left iliac, femoral, popliteal, posterior tibial, and dorsal pedal pulses. The right femoral, iliac, and popliteal pulses were present but very weak, and the right dorsal pedal and posterior tibial pulses were absent. A claudication test consisting of walking 120 paces per minute on level ground resulted in pain in the left hip and low back in 15 seconds, pain descending the left thigh in 40 seconds, severe pain in the thigh and development of a limp in 65 seconds, and severe left calf pain and inability to walk in 90 seconds. After two and one-half minutes of standing rest, the patient was able to repeat this performance with the added symptom of numbness in the left foot and ankle. Elevation pallor was present on the left side; however, it was not marked. There was mild dependent rubor in both feet, and the venous filling time was prolonged on the left. Oscillometric tracings taken just above the ankle showed no oscillations on the left and very little on the right. Recordings taken higher on the calf were similar. Bilateral posterior tibial nerve blocks accompanied by total plantar anesthesia revealed no rise in temperature on the left side and an incomplete rise on the right. Roentgenograms revealed signs of widespread, flaky calcifications in the abdominal aorta and iliac arteries. Lumbosacral roentgenograms were normal, and the two myelograms performed elsewhere were reviewed and read as normal. Aortography was not carried out because authorization could not be obtained; however, the clinical diagnosis of atherosclerotic obliteration in the left common iliac and femoral arteries and the third portion of the right subclavian artery could be made with certainty.

CASE 4.—A 43-year-old bartender was involved in an auto accident and suffered no apparent injury at the time. One year later he alleged that since the accident he had had pains in his shoulders and sexual impotency. During this one year low back and gluteal pain and perineal numbness developed on walking as little as one block. He described no symptoms of pain below his knees. After an exploratory laminectomy performed elsewhere and revealing nothing, symptoms persisted. On further examination, it was found that the patient's femoral pulses were very weak (the type occasionally felt even with a complete aortic occlusion), and there were no popliteal or pedal pulses in either leg. There were no pulsations in the oscillometric record at thigh or calf level in either lower extremity. Radiological study of the abdomen showed diffuse calcification of the lower abdominal aorta. Marked pallor of both feet was produced by elevation. There were no significant abnormal neurological findings, and a diagnosis was made of terminal aortic occlusion due to atherosclerosis. This was later confirmed by aortography.

Main Diagnostic Differences Between Vascular, Neurological, and Musculoskeletal Lesions

Symptom or Diagnostic Study	Arterial Occlusive Disease	Low Lumbar and Sacral Nerve Irritation	Musculoskeletal Disorders
Location of pain	Corresponds to muscular group with common blood supply (sclerotomal)	Corresponds to anatomic nerve distribution (dermatomal)	Sclerotomal distribution
Localized tenderness	None, except after marked muscular effort, with pain of claudication	Over involved nerves	Over locally involved area
Effect of muscular exercise	Causes onset and development of pain proportionate to muscular effort	May aggravate already existing pain	Pain present and aggravated
Effect of cessation of exercise	Almost immediate cessation of pain	May slowly and partially alleviate pain, or pain may persist hours or days	Same as for low lumbar and sacral nerve irritation
Hypesthesia and numbness	Often present after marked exercise (sclerotomal distribution)	Often present (dermatomal distribution)	None
Weakness, atrophy, and fatiguability	Frequent	May occur	Usually none, but there may be disuse atrophy
History of injury	May be present	Frequent	Frequent
Pallor of foot on elevation	Marked	None	None
Skin temperature of feet	Decreased	Normal	Normal
Effect of Valsalva maneuver (cough, strain) on pain	None	May aggravate or start pain	Same
Positional effect	None	Limited or painful straight leg raising test; positive Lasègue's sign	Some limitation of motion of affected area
Impaired or absent Achilles tendon reflex	Normal	Present or absent	Normal
Peripheral pulses	Diminished or absent at or distal to level of occlusion	Normal	Normal
Roentgenography	May show vascular calcification or may be normal	May show narrowed intervertebral space, spondylolisthesis, arthritis, etc.	May show skeletal deformity
Oscillometry	Decreased or absent pulsations in affected extremity	Normal	Normal
Myelography	Normal	May show filling defect in column of dye	Normal
Aortography	Demonstrates stenotic or occluded artery and general atherosclerotic changes	Normal	Normal

COMMENT

The symptoms manifested by patients with pain in the low back and lower extremity due to vascular insufficiency are sufficiently different to separate them clearly

from patients with pain secondary to musculoskeletal alteration or nerve root compression. Yet we have encountered several instances in which patients with atherosclerotic occlusive disease have been subjected to myelography, pneumoencephalography, leg traction, and even laminectomy, because of the similarities in the signs and symptoms of these syndromes. In view of the frequency with which low back, lumbar, gluteal, and lower extremity pain is seen, especially in industrial accident cases, the clinical picture of arterial occlusive disease might easily be overlooked.

Among the most salient features of arterial occlusive disease is the onset of pain and its rapid increase in close proportion to the amount of muscular exercise of the affected area. Another distinguishing feature is the rapid

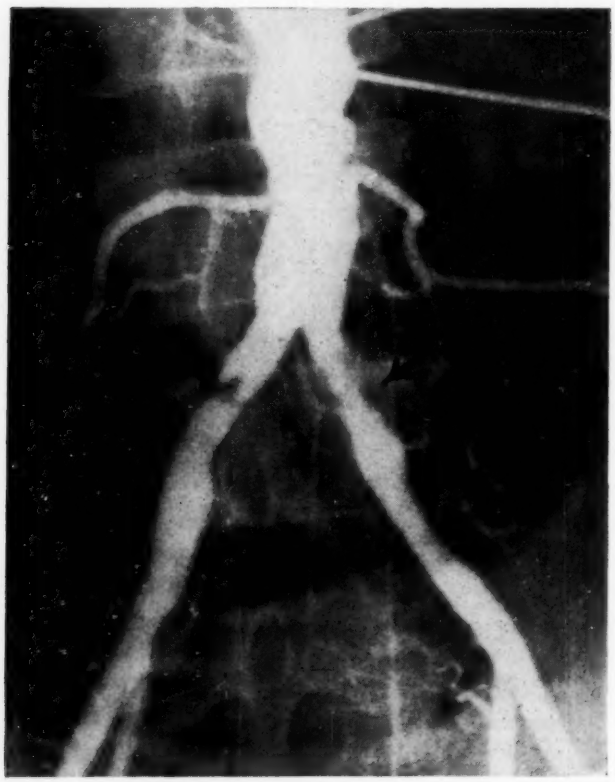

Fig. 3 (case 2).—Aortogram showing marked constriction of both iliac arteries.

regression of pain on cessation of the muscular effort that brought it about. The pain of claudication subsides in seconds or minutes, while nerve pressure pain or musculoskeletal disorders aggravated by exercise subside very slowly and often last hours beyond the aggravating effort.

With arterial occlusion there is absence of peripheral pulses, although even in terminal aortic occlusion very weak femoral pulsations may occasionally be felt, the result of collateral circulation. A cool and pale foot, dependent rubor, a decreased or reduced oscillometric recording in the thigh and calf, and the conclusive evidence of obstruction seen in an aortogram displaying the major lower aortic and extremity circulation usually suffice to make the diagnosis of arterial occlusive disease.

Pain and paresthesias due to pressure on nerve roots or nerve trunks will follow a fairly precise dermatomal distribution, while pain in an ischemic muscle group will follow a sclerotomal pattern.[7] Sclerotomal pain is felt more diffusely in large parts of the extremity without definite relation to the dermatome belonging to a limited spinal segment. The area of reference of pain from muscle ischemia closely follows that described by Inman and Saunders [8] as well as Feinstein and co-workers [9] in their descriptions of the sclerotomal distribution of pain. Aggravation of pain by the Valsalva maneuver, diminished or absent Achilles tendon reflex, lumbar muscle spasm, presence of Lasègue's sign, painful or limited straight leg raising test, and abnormal myelogram findings support a neurological cause.

In these case histories we have presented several instances in which diagnostic procedures, operation, and prolonged treatment were carried out because of an overlooked vascular lesion that simulated either neurological or musculoskeletal disorders. We feel that the differential diagnosis of low back, thigh, or gluteal pain should include consideration of arterial occlusion with herniated intervertebral disks, sacroiliac disease, or other abnormality of the low back and hip as a cause of symptoms in this area. The table contains an outline of the main diagnostic differences between vascular, neurological, and musculoskeletal lesions.

536 Mason St. (2) (Dr. Gilfillan).

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Diabetic Acidosis.—Lack of adequate available carbohydrate and sufficient insulin to effect its metabolism is followed by ketosis, leading to acidosis and eventually coma and death if prompt and adequate emergency measures are not taken. The condition is always amenable to therapy if a proper diagnosis is made early and sufficiently brisk therapy provided before irreparable damage to the central nervous or cardiovascular-renal systems occurs. In the known diabetic, properly instructed and under adequate management, sufficiently early diagnosis should not be a problem. Proper instruction should insure that the patient, and, if possible, the immediate family, be aware of the major precipitating factors and the most frequent warning symptoms of acidosis. Gastrointestinal disturbances accompanied by vomiting, and infections, especially generalized ones, or those local ones leading to fever and leukocytosis, are two of the most frequent offenders. In each case available carbohydrate is depleted due to anorexia or vomiting, or both, and at the same time the need for insulin is markedly raised. Persistent glycosuria with resulting polyuria, polydipsia and dehydration, followed by drowsiness, abdominal pain and vomiting, should always be promptly evaluated and treated. Many patients who normally manage their diabetes carefully impede early diagnosis of ketosis or acidosis by failing to test their urine when they become acutely ill and speed the onset of serious trouble by lowering the dose of insulin or omitting it entirely under the mistaken impression that if they are unable to eat, less insulin is necessary. In reality, intercurrent illness nearly always raises the requirement for insulin, and failure to provide additional amounts at such times is perhaps the most frequent immediate cause of acidosis.—J. M. Goldinger, M.D., Emergency Complications of Diabetes Mellitus, *Medical Clinics of North America*, January, 1954.

PROTRUDED LUMBAR INTERVERTEBRAL DISKS IN CHILDREN

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and
Roger L. J. Kennedy, M.D., Rochester, Minn.

Protruded intervertebral disks in the lumbar region occur rarely during childhood and infrequently during adolescence. Jelsma,[1] in 1944, reported a series of 150 cases of protruded intervertebral disks in which the treatment was surgical; the youngest patient in this series was 17 years of age. In 1946, Wahren [2] described a protruded lumbosacral disk in a girl 12 years of age. In 1947, Love [3] observed that only 25 (2.1%) of his series of 1,217 patients who had been operated on for protruded intervertebral disks were less than 20 years of age. Key,[4] in 1950, reported that he had removed protruded intervertebral disks from two patients 18 years of age, one patient 14, and another 12. All these were lumbosacral protrusions. He considered that the physical signs were more extensive than the complaints; otherwise, the clinical features in these patients did not differ materially from those in adult patients who had similar lesions.

Approximately 6,500 patients who had protruded intervertebral disks in the lumbar region have been treated surgically at the Mayo Clinic between 1942 and 1952, inclusive. Review of the records disclosed that only 60 of these patients were 18 years of age or less at the time of operation; 35 were 18 years of age, 13 were 17, 7 were 16, 2 were 15, one was 14, one was 13, and one was 12. The records of five patients who were 15 years of age or less at the time of operation will be outlined briefly. We have chosen to end the period of childhood at the 16th birthday.

REPORT OF CASES

CASE 1.—A 15-year-old girl registered at the clinic on Jan. 5, 1942. She had experienced episodes of pain in the lower part of the back for three months. These usually occurred after a ride on horseback. Later, she had noted bilateral sciatic pain with vague numbness in the legs and occasional pain in the right groin. Rest in bed and use of a lumbosacral belt had been ineffective in relieving the pain.

Examination disclosed slight limitation of movements of the lumbar portion of the spinal column, slight tenderness on percussion over the same region, and sharp bilateral limitation of straight leg raising. The ankle reflex on the right side was moderately diminished. Myelography with air disclosed a protruded lumbosacral disk.

On Jan. 12, 1942, a typical midline protrusion of the intervertebral disk at the lumbosacral interspace was removed. Bilateral swelling of the nerve roots at the lumbosacral interspace was present. Results of bilateral exploration at the fourth lumbar interspace were normal. The patient's pain was relieved at the time of dismissal.

CASE 2.—A 15-year-old girl registered at the clinic on June 16, 1948, because of recurring low backache associated with bilateral sciatic pain and vague numbness in the legs for one year. No history of significant trauma to the back was elicited. Treatment by means of heat, massage, and application of a cast had been ineffective.

The only abnormalities noted on examination were slight limitation of flexion of the lumbar portion of the spinal column and tenderness on percussion over the lower lumbar vertebrae. Roentgenograms of the lumbar part of the spinal column disclosed sacralization of the last lumbar transverse process on the right. Myelography with air revealed a protruded fourth lumbar disk.

On June 30, 1948, a small conical protrusion of the intervertebral disk in the midline at the fourth lumbar interspace was removed. The lumbosacral interspace was normal. Bone grafts were placed bilaterally from the third lumbar vertebra to the second sacral segment. The patient wrote in June, 1953, that the general results of the operation had been excellent, although she occasionally noted mild transient backache after riding long distances in an automobile. She had not missed a day of school while finishing high school and college subsequent to the operation.

CASE 3.—A 14-year-old girl registered at the clinic on March 27, 1945. She had experienced increasing pain and stiffness of the lower part of the back for five months. In addition, she had noted episodes of left sciatic pain, which was intensified by coughing, sneezing, and straining. Owing to the pain, she had become unable to stand erect. A sense of numbness was present in the hip and posterior portion of the thigh on the left. She walked with a list forward and occasionally limped. No history of significant trauma to the back was obtained.

Examination disclosed moderately severe limitation of movements of the lumbar portion of the spinal column, loss of lumbar lordosis, a list forward, and severe spasm of the paravertebral muscles in the lumbar region. Lumbar scoliosis with the concavity to the left was present. Straight leg raising was moderately limited on the left. Myelography with ethyl iodophenylundecylate (Pantopaque) disclosed a large protruded disk at the fourth lumbar interspace with bilateral deformity.

On March 31, 1945, a large protrusion of the intervertebral disk at the fourth lumbar interspace was removed. This mass was so large that it closed the spinal canal. Exploration of the lumbosacral interspace disclosed no abnormalities. In June, 1953, the patient wrote that she had experienced no backache or pain in the leg since the operation and that she works regularly.

CASE 4.—A 13-year-old boy registered at the clinic on June 23, 1952. Almost daily pain in the posterior part of the left hip and in the left ankle had begun one year prior to admission. This pain occurred with flexion of the left thigh and flexion of the head. Each episode lasted only a few minutes. Occasionally the pain extended throughout the distribution of the left sciatic nerve. He had noted some weakness of the left lower extremity. Recent treatment for five weeks by rest in bed and heat had been ineffective. The boy had missed much school because of the pain. He recalled no specific trauma to his back but boasted that he lifted extremely heavy objects frequently.

Examination revealed limitation of motion of the lumbar portion of the spinal column, a list to the left, tenderness on percussion over the lumbosacral interspace, limitation of straight leg raising on the left, moderate diminution of the ankle reflex on the left, and mild weakness with slight atrophy of the anterior tibial muscle on the left. Myelography with ethyl iodophenylundecylate disclosed a protruded disk on the left at the fourth lumbar interspace (fig. 1).

Assistant to the staff (Dr. Webb), from the Section of Neurologic Surgery (Dr. Svien), and from the Section of Pediatrics (Dr. Kennedy), Mayo Clinic and Mayo Foundation.

The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

1. Jelsma, F.: Clinical Analysis of 1,000 Consecutive Cases of Low Back Pain, with Particular Reference to Sciatic Pain Caused by Extrusion of the Intervertebral Disc, South. M. J. **37**: 372-377 (July) 1944.

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On July 9, 1952, a large protruded intervertebral disk at the fourth lumbar interspace on the left was removed (fig. 2). The nerve root at this level was tightly stretched across this large underlying protruded disk. Neurological reexamination at the clinic in March, 1953, disclosed that the patient had obtained excellent results. In June, 1953, his parents wrote that the excellent results had been maintained. They added that, unknown to them, the boy had participated in a field day with 500 school children and had won first place in the broad jump without ill effect.

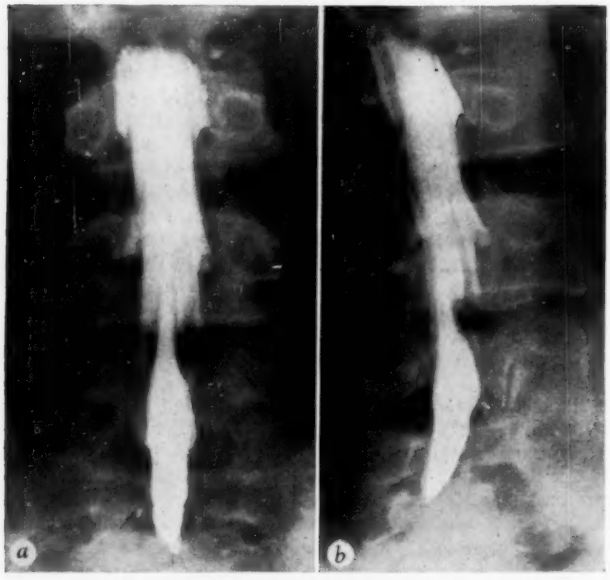

Fig. 1 (case 4).—Protruded intervertebral disk at the fourth lumbar interspace in a 13-year-old boy; *A*, anteroposterior myelogram, and *B*, oblique myelogram.

CASE 5.—A 12-year-old girl registered at the clinic on July 13, 1945. Approximately one year before admission a chair had been pulled from under her and she had fallen to the floor, landing on her buttocks. Pain in the lower part of the back with bilateral sciatica had occurred shortly after this episode. Four months prior to admission she had been hospitalized for three weeks; traction had been applied and other conservative measures of treatment had been used with no improvement. Myelography with ethyl iodophenylundecylate had been performed at this time; a defect suggesting a protruded disk at the fourth lumbar interspace had been seen. The girl later had noted weakness of the right leg while walking.

The only abnormalities disclosed by examination at the clinic were moderate limitation of straight leg raising on the right and the production of pain in the right hip by flexion of the neck. Myelography with air revealed a deformity in the column of air at the fourth lumbar and lumbosacral levels.

On July 26, 1945, large midline protrusions of the intervertebral disks at the fourth lumbar and lumbosacral levels were removed. Extensive enlargement and hyperirritability of the nerve roots were present, just as are occasionally observed in typical protrusions in adults. The lumbosacral protrusion extended more to the right than to the left.

Neurological reexamination was done at the clinic in February, 1952. The patient had been well for six years after the operation. Then she again had experienced low backache and right sciatic pain. This recurrent difficulty had subsided under conservative therapy. In June, 1953, she wrote that she was able to work regularly and that she had undergone no further surgical treatment for her back. She was bothered by her back for brief periods only when she lifted heavy objects or worked unusually hard in the garden.

COMMENT

Only 5 (0.077%) of approximately 6,500 patients who were operated on for protruded lumbar intervertebral disks were in the period of childhood (less than 16 years of age). As indicated by the figures given earlier, the incidence of protruded intervertebral disks requiring surgical treatment increases rapidly with age.

The clinical and pathological features in the five patients just mentioned do not differ significantly from those in adults who have similar lesions, a finding that agrees with that of Key, as already mentioned. A history of trauma that could be related to the onset of symptoms was obtained in three of our five cases, an incidence that roughly parallels that observed in adults. The physical findings, as in adults, varied from minimal limitation of motion of the back to severe spasm of the erector spinae muscles, changes in reflexes, and neurological defects.

Multiple protrusions were present in case 5, namely a midline protrusion at the fourth lumbar interspace and a lateral protrusion at the lumbosacral interspace. The protrusions in three of the four remaining cases were at the fourth lumbar interspace; two of these were midline in type. In the remaining case, a midline protrusion was present at the lumbrosacral interspace. Thus, the vertebral level of the protrusions in our cases, as well as those reported in the literature, conforms with the most frequent sites of protrusion in adult patients.

CONCLUSIONS

Protruded intervertebral disks are rarely encountered in children; however, the occurrence of low backache and sciatic pain in a child should arouse suspicion of the possible presence of a protruded lumbar intervertebral disk.

Fig. 2 (case 4).—Protruded intervertebral disk removed from a 13-year-old boy.

If other causes of these symptoms can be excluded, myelography and removal of the lesion should be considered after a thorough trial of conservative therapy has failed to provide relief. As evidenced by follow-up examinations of and letters from four of five patients who were less than 16 years of age and who were operated on for protruded lumbar intervertebral disks, good results from surgical treatment may be anticipated.

CARCINOMA OF THE PROXIMAL THIRD OF THE STOMACH

A CRITICAL STUDY OF ROENTGENOGRAPHIC OBSERVATIONS IN SIXTY-TWO CASES

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and
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There are many excellent reports [1] on the roentgenographic diagnosis of carcinoma of the stomach. These discuss the proper technique of examination and the utilization of special procedures to increase accuracy of diagnosis. The difficulties of diagnosis of lesions in the proximal third of the stomach are stressed, and it is asserted that mistakes in diagnosis are more frequent in this location. There does not appear to have been any recent statistical analysis of the accuracy of diagnosis of lesions confined to specific regions of the stomach.

We compiled the reports rendered on gastrointestinal roentgenographic series performed at the New York Hospital in the years 1947 through 1952 on patients subsequently proved to have carcinoma of the stomach. We compared the accuracy of diagnosis in cases in which the lesion was confined to the proximal third of the stomach with a series of cases in which there was involvement of the distal two-thirds. An attempt was made to determine not only the number of times the proper diagnosis was missed but also the circumstances underlying the errors of diagnosis. In this way it was hoped that conditions demanding particular acuity on the part of the examiner would be uncovered. It was also hoped that some leads might be encountered suggesting improvements in technique. In conjunction with our study of the roentgenographic observations in carcinoma of the proximal third of the stomach, the clinical data in these cases were observed. A report on these observations is in preparation.

METHODS

Technique of Examination.—The examinations included in this study were routine upper gastrointestinal series performed by regular members of the New York Hospital radiology department. In no case were any special techniques employed. The routine technique for an upper gastrointestinal x-ray study at this hospital is as follows. The esophagus and stomach are observed under fluoroscopy with the patient in an upright position as he slowly drinks a liquid barium-saline mixture. The flow of barium into the stomach and the contour of the gastric mucosa is carefully studied at the first swallow. Positioning of the patient and abdominal palpation are used throughout the examination. Spot films are taken of the fundus of the stomach containing gas and barium and of the duodenal bulb. Spot films with or without pressure are also made of any suspicious area. The table is then lowered and fluoroscopy is carried out with the patient in both the supine and the prone positions, and additional spot films are taken when an abnormality is suspected. In many, but not all, cases a spot film with the patient supine is obtained. The examination is concluded by taking three routine views of the stomach, with the patient prone in various degrees of obliquity, and a one hour film. The films of all examinations performed by a junior member of the radiology department (a resident or fellow) are reviewed in conference by at least one senior member of the department. Many of the examinations performed by senior members are similarly reviewed.

Cases were included in this series only when the lesion was proved by microscopic examination to be an adenocarcinoma, and the site was determined by actual visualization at the operating or autopsy table. In every case the x-ray examination was performed after the onset of symptoms. Usually this examination preceded inspection of the lesion by a period of only a few days or weeks. Many cases were excluded because x-ray examinations were performed elsewhere or there was no histological confirmation of the presence of carcinoma.

Localization of the Tumor.—All cases meeting the above criteria were divided into two groups. In one group the tumor was confined to the proximal third of the stomach (with or without spread or metastasis outside the stomach). The second group comprised cases with tumor involvement of the distal two-thirds of the stomach, whether or not the proximal third was also involved. The location of the tumor was determined by inspection of the reports rendered by the surgeon or pathologist and not by interpretation of the roentgenogram. While this determination was admittedly not completely accurate or reliable, we feel that it was sufficiently accurate for the purposes of this study. The terms proximal third and distal two-thirds of the stomach are used in preference to less precise terminology such as cardiac end of the stomach and upper pole of the stomach. We attempted to further localize the lesion by subdividing the proximal third of the stomach into the following regions: cardia, fundus, and remainder of the proximal third. The cardia comprised the area within 1 in. (2.54 cm.) of the esophagogastric junction. The fundus lay superior to the upper margin of the cardia. The remainder of the proximal third consisted of the most proximal portion of the body of the stomach.

DEFINITION OF TERMS

The term "correct diagnosis" means that the report specifically states that carcinoma of the stomach is present or is probably present. The meaning of the term "le-

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Dr. John A. Evans, Director of the Department of Radiology, the New York Hospital, assisted in the preparation of this report.

1. (*a*) Stewart, W. H., and Illick, H. E.: Roentgen Diagnosis of Carcinoma at the Cardia, Am. J. Roentgenol. **32**: 43 (July) 1934. (*b*) Stewart, W. H., and Illick, H. E.: Cancer of the Cardia, Roentgenographically Considered, New York J. Med. **39**: 1685 (Sept. 1) 1939. (*c*) Kirklin, B. R.: Roentgenologic Diagnosis of Cancer of the Cardia, Am. J. Roentgenol. **41**: 873 (June) 1939. (*d*) Kirklin, B. R.: Mistakes and Misunderstandings in the Roentgenologic Diagnosis of Gastric Cancer, Arch. Surg. **46**: 861 (June) 1943. (*e*) Sherman, R. S.: Roentgen Diagnosis of Cancer of the Cardiac Region of the Stomach, Surgery **23**: 874 (June) 1948. (*f*) Kinsella, V. J.: Ineffectiveness of Present-Day Radiology in Diagnosis of Carcinoma of the Cardiac End of the Stomach with Suggestions for Improvement, Australian & New Zealand J. Surg. **18**: 243 (April) 1949.

sion not seen" is obvious. The term "misdiagnosis" includes all cases in which the presence of a lesion was recognized but the lesion was not identified as a carcinoma. It is readily apparent that these cases may not represent errors on the part of the examiner, since exact diagnosis may have been impossible. Nevertheless, the exact diagnosis was not made; for example, a diagnosis of lymphosarcoma was considered a misdiagnosis.

Fig. 1.—Roentgenogram used in determining the gastrophrenic interval in a patient with carcinoma of the proximal third of the stomach.

The gastrophrenic interval represents the distance between the upper margin of the lumen of the fundus (as indicated by the top of the barium or air column) and the left leaf of the diaphragm. The measurement was made only on the film of the stomach with the patient in the prone position and in some cases was not technically satisfactory. A vertical line drawn at the most mesial portion of the proximal third of the stomach was considered the base line, and measurements of the gastrophrenic interval were made at distances of 4 and 6 cm. to the left of the base line (fig. 1 and 2). The gastroesophageal junction seemed the logical choice for the base line, but in many instances the site of the cardiac orifice was impossible to determine on the available films. We arbitrarily selected 1.5 cm. as the upper limit of normal for the gastrophrenic interval.

In considering accuracy of diagnosis, it is of primary importance to define terms and to indicate what is meant by a "missed diagnosis." Much disagreement is due to inexact or conflicting use of terminology in the literature. Some authors consider the diagnosis in error only when no lesion is visualized. If a lesion is seen and described, they consider the diagnosis accurate. Others break the findings down into accurate, suspected, and missed diagnoses. We prefer a variation of the latter method and do not feel that a complete report has been rendered when it indicates only that an abnormality is present in a specific location. While an actual histological diagnosis of carcinoma is impossible from an x-ray study, it is usually possible to indicate the strong probability of malignant neoplasm. When the appearance is not sufficiently characteristic to permit an interpretation of probable carcinoma, or when another lesion is suggested, we are dealing with a definite limitation of the value of the x-ray study.

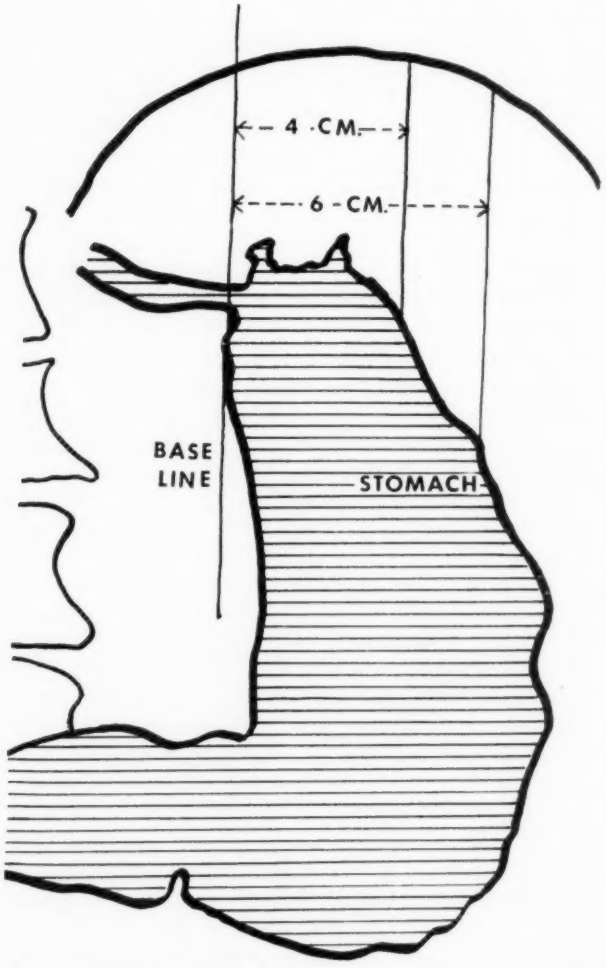

Fig. 2.—Schematic outline of figure 1, showing measurements used in determining the gastrophrenic interval.

Any diagnostic technique is of greater value when its limitations are clearly defined. This report endeavors to define the limitations of routine x-ray study in the diagnosis of carcinoma of the proximal third of the stomach.

ACCURACY OF DIAGNOSIS

There are few unequivocal statements in the literature presenting in numerical terms the accuracy of x-ray diagnosis of carcinoma of the stomach. Fewer still are the sta-

tistical analyses showing the results in particular series of cases. Pack [2] presented the following figures based on 1,022 cases of carcinoma involving any portion of the stomach: 91.5% accurately diagnosed, 3.0% suspected, and 5.5% reported normal. Abrahamson and Hinton [3] reported 28 incorrect (negative) examinations (11%) in 265 cases. Ochsner and Blalock [4] reported correct x-ray diagnoses in 96.5% of 210 cases and incorrect diagnoses in 3.5% of 210 cases. There is no indication in these or other reports [5] of the accuracy of diagnosis when the proximal third of the stomach is involved, although there is general agreement that lesions in this location present greater difficulties. Antoine and Stehlin [6] reported 10 errors (21%) in x-ray examinations in 47 cases of carcinoma confined to the cardia or cardia and esophagus. Unfortunately, this figure is not broken down to show how often the lesions were missed completely, nor are there comparable figures for the remainder of the stomach as a guide to the general level of diagnostic accuracy.

In our series of 269 cases (table 1) of carcinoma involving any portion of the stomach, a lesion was detected in 96% of the cases and was correctly diagnosed as carcinoma in 80% of the cases. In 16% a lesion was seen but was misinterpreted, while in 4% the lesion was not seen. However, when the figures are broken down according to regions of the stomach, the striking difference in the accuracy of diagnosis between lesions in the proximal third and distal two-thirds is immediately apparent. In the proximal third the lesion was missed completely in 13% of the cases, while in the distal two-thirds this occurred in only 2% of the cases. On the other hand, an exactly equal percentage (15%) was misdiagnosed in both areas.

TABLE 1.—*Diagnostic Accuracy of X-Ray Study of Carcinoma of Stomach (1947-1952)*

	Entire Stomach		Proximal Third of Stomach		Distal Two-Thirds of Stomach	
Result	No.	%	No.	%	No.	%
Correct diagnosis	217	80	45	72	172	83
Misdiagnosis	40	16	9	15	31	15
Lesion missed	12	4	8	13	4	2
Total	269	100	62	100	207	100

Conditions Associated with Erroneous Diagnoses.—On analysis of cases misdiagnosed, several interesting observations were made. When the lesion involved the distal two-thirds of the stomach, more than half (52%) of the mistaken or incomplete diagnoses were in cases showing ulceration without definite infiltration. The ulcers were considered benign or at least could not be said to be probably malignant. Most of the remaining errors were made in cases in which pyloric obstruction was present. Thus, in our series of 207 cases of carcinoma of the distal two-thirds of the stomach, the correct diagnosis was made in almost 95% of the cases (201 cases) in which neither ulceration nor pyloric obstruction was present. On the other hand, misdiagnosis of lesions of the proximal third was due to a variety of causes, chiefly esophageal obstruction.

When carcinoma of the proximal third was not diagnosed, the principal interfering factors appeared to be the presence either of a cascade configuration of the stomach (fig. 3) or of a hiatus hernia (fig. 4). A cascade was present in 75% of the cases in which the lesion was not seen and in 55% in which the lesion was seen but misinterpreted. In similar categories, hiatus hernia was present 25% and 11% of the time. Conversely, when a cascade was present, the correct diagnosis was not made in 35% of the cases. When hiatus hernia was present, the correct diagnosis was not made in 75% of the cases. The presence of a cascade configuration of the stomach or a hiatus hernia demands particular vigilance in the examination of the proximal third of the stomach. Whether or not these conditions increase the actual incidence of carcinoma,[7] it seems quite clear that they may obscure the presence of malignancy and make x-ray diagnosis exceedingly difficult.

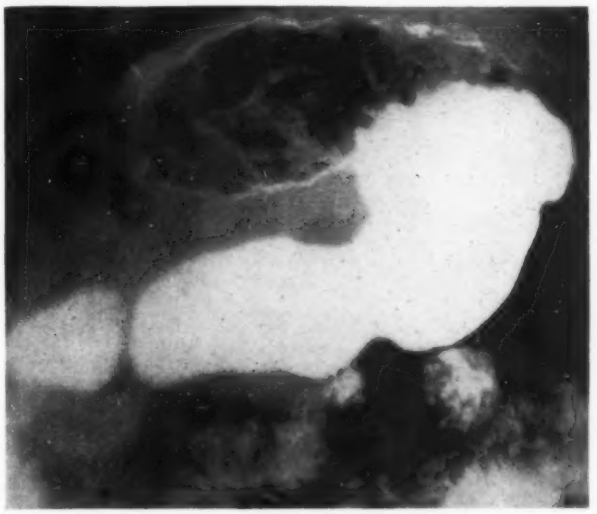

Fig. 3.—Carcinoma of the proximal third of the stomach in a patient with a cascade configuration of the stomach (case 10).

RESULTS

Incidence of Carcinoma of Proximal Third of Stomach.—In our series of 269 cases, 62 cases (25%) showed involvement confined to the proximal third of the stomach. This seemed an unexpectedly high percentage in view of the often-quoted fact that 10% of carcinomas of the stomach are found in the cardia.[8] However, the difference is undoubtedly due to the cases that involve the fundus and other portions of the proximal third. Sherman [1e] reported 22% of 205 cases of carcinoma of the

2. Pack, G. T.: Diagnosis of Cancer of the Stomach, New York J. Med. **53**: 390 (Feb. 15) 1953.

3. Abrahamson, R. H., and Hinton, J. W.: Carcinoma of the Stomach; Review of 444 Cases to Emphasize Inadequacy of Present Methods for Early Diagnosis, Surg., Gynec. & Obst. **71**: 135 (Aug.) 1940.

4. Ochsner, A., and Blalock, J.: Carcinoma of the Stomach, J. A. M. A. **151**: 1377 (April 18) 1953.

5. (*a*) Bolker, N.: Early Diagnosis of Carcinoma of the Stomach, Ann. Int. Med. **30**: 903 (May) 1949. (*b*) Gray, D. B., and Ward, G. E.: Delay in Diagnosis of Carcinoma of the Stomach, Am. J. Surg. **83**: 524 (April) 1952.

6. Antoine, and Stehlin: Images radiologiques du cancer du cardia, J. radiol. et électrol. **31**: 416, 1950.

7. Feldman, M., and Myers, P.: Coexistence of Carcinoma of the Stomach and Esophageal Hiatus Gastric Hernia, Am. J. Med. Sc. **224**: 519 (Nov.) 1952.

8. Stewart and Illick.[1b] Ochsner and Blalock.[4] Bolker.[5a] Gray and Ward.[5b]

stomach to be located in the cardiac region. This agrees closely with our observations. The exact location within the proximal third of the stomach seemed to make very little difference as far as the accuracy of x-ray diagnosis was concerned.

X-Ray Observations in Carcinoma of Proximal Third of Stomach.—A variety of special signs have been described as indicative of the presence of carcinoma of the proximal third of the stomach, and recommendations have been made concerning the technique of examination. Our series of cases was analyzed to determine the diagnostic value of some of these signs and techniques. Kirklin and Gilbertson [9] stressed the frequent occurrence of abnormalities in the stomach gas bubble as visualized on routine chest films. In their series of 68 cases of tumors of the cardia, an obvious defect in the bubble was

Fig. 4.—Carcinoma of the proximal third of the stomach in a patient with a hiatus hernia (case 11).

seen in 21 cases, and in 14 other cases a lesion was suspected. Thus, the bubble appeared abnormal in more than half the cases. In our series, a completely normal appearance of the gas bubble was present in only 5 of the 48 cases in which the chest films were available. In 14 cases the gas bubble was not visualized, and in 29 cases it appeared distorted. However, the significance of this is hard to evaluate without comparison with the appearance of the air bubble in a large series of normal control cases.

Careful fluoroscopy was carried out in every case. Visualization of the lesion fluoroscopically was of great help, since it permitted precise spot film radiographic examination of the suspicious area. In almost one-third of our cases (31%), no abnormality was seen on fluoroscopy. Splitting of the barium stream is frequently mentioned [10] as a valuable diagnostic sign; however, it was observed in only 10% of our cases. Various views have been recommended to best demonstrate a lesion in the proximal third. Kinsella [1f] in Australia stressed the importance of films taken with the patient supine, while in the United States, in recent years, the emphasis has been on the use

TABLE 2.—*Diagnostic Accuracy of X-Ray Study of Esophageal Involvement*

Result	Patients with Pathological Conditions in Esophagus	Pathological Conditions			
		Dilatation	Infiltration	Ulceration	Displacement
Correct diagnosis (45)....	31	16	30	3	10
Misdiagnosis (9).....	5	4	5	1	1
Total no. (62) *.....	36	20	35	4	11
%.....	..	55	97	11	31

* In the 8 patients in whom the lesion was not seen, there was no pathological condition in the esophagus.

of films taken with the patient upright to demonstrate the lesion in the gas bubble. We were not impressed with the unique importance of any particular position. In 42% of the cases the lesion was well visualized on more than one view. In 42% of the cases the routine prone study proved substantially superior to the other views. In a small percentage of cases, views with the patient upright (10%) or supine (6%) proved particularly valuable. Esophageal abnormalities have been mentioned [11] as a frequent occurrence in carcinoma of the proximal portion of the stomach. This proved true in our series (table 2), since the esophagus was involved in 58% of the cases. In every case in which the esophagus was involved, the lesion was seen on x-ray study. In some cases, however, a misinterpretation was made. This was particularly notable in one case in which the hugely dilated esophagus led to the mistaken diagnosis of cardiospasm.

Many authors [12] have commented on the appearance of the space between the lumen of the fundus of the stomach and the dome of the left leaf of the diaphragm. This space is normally only several millimeters in width and is smooth in contour. It may occasionally be increased in width owing to interposition of the liver, spleen, splenic flexure of the colon, or free abdominal fluid. We use the term gastrophrenic interval to denote this space, and we have attempted to determine its sig-

TABLE 3.—*Gastrophrenic Interval* *

Fundal Involvement	Total	Normal Limits		Increased Interval	
		No.	%	No.	%
Present.....	29	12	41	17	59
Absent.....	20	20	100	0	0
Total.....	49	32	65	17	35

* In 49 cases in which determination of this interval was possible.

nificance. Our technique of measurement has been described earlier in this report. It will be noted that the gastrophrenic interval was greater than normal in about one-third of the cases (table 3). In the absence of any exact information, we decided upon 1.5 cm. as the upper limit of normal for the gastrophrenic interval. This may well be too large a figure; however, by using this value, we were able to exclude false positives. In every case in

9. Kirklin, B. R., and Gilbertson, E. L.: Roentgenograms of Thorax That Suggest Carcinoma of the Stomach, J. A. M. A. **134**: 1228 (Aug. 9) 1947.
10. Stewart and Illick.[1a] Kirklin.[1c]
11. Stewart and Illick.[1b] Sherman.[1e]
12. Hodges, F. J.: Downward Displacement of the Gastric Cardia, Radiology **54**: 194 (Feb.) 1950. Kinsella.[1f] Kirklin and Gilbertson.[9]

which the interval was increased, a tumor was found in the fundic region of the stomach. This suggests that, when the gastrophrenic interval is greater than 1.5 cm., a tumor mass in the fundus of the stomach should be suspected.

cases. However, in 41% of the cases in which the lesion was not seen or was misinterpreted, more than one examination had been done. Nevertheless, when carcinoma is strongly suspected, reexamination is indicated if the initial x-ray study fails to confirm the diagnosis.

TABLE 4.—*Findings in Nine Misdiagnosed Cases*

Case No.	Symptoms	Signs	Laboratory			Observations on Endoscopy	Pap.	Method of Diagnosis	Pathological Conditions	X-Ray Study			
			Anemia	Stool Guaiac	Gastric Acidity					No. of Examinations	Cascade	Hiatus Hernia	X-Ray Diagnosis
1	Pain, anorexia	None	0	0	ND	ND	+	Operation	14 × 8 cm. mass in upper pole	1	+	+	Questionable lesion in fundus
2	Pain, vomiting, dysphagia, hematemesis	Questionable mass	0	0	+	Narrowing at 42 cm., mega-esophagus	+	Pap. smear	5 cm. mass at cardia involving esophagus	1	+	0	Cardiospasm
3	Pain, weight loss, vomiting	Cachexia	0	ND	ND	ND	ND	Operation	Ulcerated mass 4.5 cm. at cardia	1	+	0	Lymphosarcoma or leiomyosarcoma
4	Pain, melena	None	+	+	+	ND	ND	Operation	3 cm. mass at cardia	3	0	0	Gastric ulcer
5	Weight loss, dysphagia, vomiting	None	0	0	+	Questionable lesion at cardio-esophageal junction	0	Operation	7 × 5 cm. mass in hiatus hernia	3	0	+	Hiatus hernia esophagitis peptic ulcer of esophagus
6	Pain, weight loss, vomiting	Cachexia	+	+	ND	Obstruction of distal part of esophagus	+	Pap. smear	Large mass in proximal third and esophagus	1	+	0	Questionable lesion in distal part of esophagus
7	Pain, anorexia, weight loss, melena	Questionable mass and enlarged liver	+	+	ND	ND	ND	Operation	Large fundal mass	2	0	0	Questionable lesion in fundus
8	Pain, anorexia, weight loss	Cachexia	ND	ND	ND	ND	ND	Operation	Large mass in cardia and esophagus	2	+	0	Questionable lymphosarcoma
9	None (pernicious anemia)	None	+	+	0	ND	ND	Operation	2 × 3 × 1.5 cm. mass on lesser curvature below cardia	1	0	0	Questionable leiomyoma

0 = absent or negative.
+ = present or positive.
ND = procedure not done.
Pap. = Papanicolaou study for evidence of malignancy.

TABLE 5.—*Findings in Eight Missed Cases*

Case No.	Symptoms	Signs	Laboratory			Observations on Endoscopy	Pap.	Method of Diagnosis	Pathological Conditions	X-Ray Study			
			Anemia	Stool Guaiac	Gastric Acidity					No. of Examinations	Cascade	Hiatus Hernia	X-Ray Diagnosis
10	Pain, weight loss, dysphagia	None	0	+	ND	Mass in distal part of esophagus	ND	Endoscopy	Large mass in cardia	1	+	0	Normal stomach
11	Pain, weight loss, melena, vomiting	Mass in right upper quadrant of abdomen	0	0	0	ND	+	Pap. smear	Nodular mass at cardia	1	0	+	Normal stomach with hiatus hernia
12	Pain, anorexia weight loss	Cachexia, tenderness	+	0	0	Nodule on lesser curvature	ND	Endoscopy	3 cm. ulcer in 5 cm. tumor, high on posterior wall	2	+	0	Normal stomach
13	Weight loss, dysphagia	Enlarged liver	+	+	ND	ND	ND	Postmortem	Tumor at cardia, 6 × 7 cm.	1	+	0	Normal stomach
14	Pain, anorexia	Enlarged liver	0	ND	ND	ND	ND	Postmortem	6 cm. ulcer immediately below cardia	1	+	0	Normal stomach
15	Pain, anorexia, weight loss	Enlarged liver	0	+	ND	ND	0	Operation	Mass in fundus 9 × 8 × 3 cm.	1	+	0	Normal stomach
16	Pain, melena	None	+	+	0	Ulcer on posterior wall	+	Pap. smear	10 cm. mass on posterior wall	2	+	0	Normal stomach
17	Pain, anorexia, weight loss	None	0	0	ND	Normal	+	Pap. smear	6 cm. mass immediately below cardia	2	0	0	Normal stomach

0 = absent or negative.
+ = present or positive.
ND = procedure not done.
Pap. = Papanicolaou study for evidence of malignancy.

In nine cases, a lesion seen on the roentgenogram was misinterpreted (table 4). In eight cases roentgenograms did not show the lesion (table 5). Multiple x-ray studies were of value in arriving at the diagnosis in 20% of our

Use of Special Techniques.—In our study, cases were examined by routine x-ray methods only. Our technique has been described, and no special techniques were employed except for the occasional use of carbonated water

to enlarge the gas bubble. Special procedures such as the introduction of air into the stomach through a tube,[13] distention of a balloon in the stomach,[14] induction of pneumoperitoneum,[15] tomography, or the combination of several of these methods may increase the accuracy of the examination; however, they are too time-consuming to be used routinely as part of every upper gastrointestinal x-ray study. Their precise value in increasing the accuracy of diagnosis in this portion of the stomach has not been critically evaluated. Perhaps they should be employed when there is a strong suspicion of a tumor on either a radiographic or a clinical basis. When the lesion is completely overlooked on the routine x-ray study, the use of special techniques is rarely considered.

COMMENT

Certain limitations were inherent in our study. First, we were unable to make any statistical analysis of the frequency of false positive x-ray diagnoses in cases erroneously interpreted as carcinoma of the stomach. Second, and more important, our figures on mistaken x-ray diagnoses represent only the minimal values. A mistake could be identified only when the patient's subsequent course was known. Undoubtedly a certain number of patients whose roentgenograms failed to reveal a lesion actually had carcinoma of the stomach and died or were treated elsewhere. These patients were often lost to follow-up, and hence could not be included in this report. On the other hand, patients showing radiographic abnormalities were almost invariably followed and the diagnosis was established. Only by careful follow-up study over the course of several years of every patient receiving an x-ray examination, whether the examination was abnormal or normal, could this problem be properly solved.

The magnitude of the error introduced by incomplete follow-up cannot be estimated. At this center, many patients come from great distances, and subsequent information is not available. On the other hand, newer techniques such as Papanicolaou smears of gastric contents now bring some patients to surgery who, on the basis of an x-ray study that shows normal results, might otherwise be discharged without operation. We wish to emphasize that our figures, and probably those of other observers, indicate the minimal percentage of error in the x-ray diagnosis of gastric carcinoma.

Finally, our figures reveal the degree of accuracy of x-ray examination at a large hospital, such as the New York Hospital, where the staff is large and constantly changing. The staff members differ widely in experience. Some authors [16] express the view that mistakes in regard to the radiographic diagnosis of carcinoma of the stomach are due, almost invariably, to the inexperience or lack of ability of the examiner. They consider it improper to pool the work done by the younger residents and the attending radiologists. They state that the accuracy of diagnosis should be nearly 100% in expert hands.

An important conclusion of our study is that, even in expert hands, there is a limitation of the accuracy of the routine x-ray study in the diagnosis of carcinoma of the promimal third of the stomach. At present, errors appear to be unavoidable. There is a striking difference between the accuracy of diagnosis of lesions in the proximal third and those in the distal two-thirds of the stomach, all examinations being performed by the same group of observers. This confirms the generally accepted view that lesions of the proximal third present greater difficulties in diagnosis. Comparison of the results achieved by members of the resident staff with those achieved by the attending staff did not show any significant difference between the two groups. We certainly do not wish to deprecate the value of good training, nor do we mean to suggest that the results obtained in this institution are optimal. Unquestionably, the more skillful examiner will achieve greater success than the one less skilled. However, our observations do imply that there are certain limitations inherent in the x-ray technique itself, as currently employed.

It is our belief that a mere descriptive report, limited to the recital of the roentgenographic appearance, is inadequate. Whenever possible, it is desirable that a definitive diagnosis be made. Specifically, whenever the possibility of malignancy is present, it should be called to the attention of the clinician in the report. The attending physician may not be aware of the limitations of radiographic diagnosis. If diagnoses such as gastric ulcer or obstructed stomach are reported, he may conclude that malignancy is not present, since no mention was made of it. This may seem self-evident, but if the ideal of early treatment of cancer is ever to be achieved, complete cooperation between the radiologist and the clinician is essential. Both must be aware of the difficulties involved in diagnosis and the limitations of the method of study. There must be a complete sharing of information, and the radiologist must not assume that the implications of a descriptive diagnosis will be fully appreciated.

SUMMARY

Sixty-two cases of carcinoma of the proximal third of the stomach were selected from 269 proved cases observed at the New York Hospital in the years 1947 through 1952. Of the cases confined to the proximal third, 72% were correctly diagnosed. A lesion was seen, but misinterpreted, in 15%, while no lesion was seen in 13% of the cases. For the cases involving the distal two-thirds of the stomach, a correct diagnosis was made in 83% of the cases, a lesion was seen but misinterpreted in 15% of the cases, and no lesion was seen in 2% of the cases. These differences seem highly significant and confirmed the general impression that diagnosis of proximal third gastric lesions is more difficult. A statistical analysis of the radiographic findings was carried out, and the factors influencing diagnosis are discussed.

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16. Kirklin.[1d] Sherman.[1e]

TREATMENT OF KELOIDS WITH HYALURONIDASE

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Keloids are a vexing problem. The surgeon finds them a multiheaded hydra, ready to spring up again after being cut down, and the dermatologist is frustrated often when radiotherapy fails. The patient finds his healing—scars—unesthetic and frequently painful and itchy. In many cases, the cure is worse than the disease, and nothing is done. In early cases, radiotherapy is useful, and sometimes freezing methods, as with liquid nitrogen, may help. For older lesions, surgical removal, followed by radiotherapy to prevent recurrence, is necessary. Many times, however, these procedures fail to achieve their purpose.

The keloid represents an abnormal growth of connective tissue, and it seemed that the application of some of the newer knowledge of connective tissue and connective tissue diseases might point the way to their more effective treatment or prevention, or both. An attempt along these lines was made by Conway and Stark,[1] who described their experiences with the use of corticotropin (ACTH) systemically and locally. They were able to prevent the return of keloids after surgical removal and plastic repair by the systemic use of this hormone given daily for 20 days. In four subjects, corticotropin was injected locally into the keloids with the addition of hyaluronidase to facilitate the spreading of the material injected. The keloids were softened and blanched somewhat after this treatment. Both systemic and local treatments relieved pain and itching. A single lesion in the group treated locally was injected with hyaluronidase alone, while a nearby keloid received corticotropin and the enzyme. Conway and Stark felt that the former treatment, intended as a control procedure, gave "no change in physical signs" in the lesion. It would be desirable to have additional evidence of such control treatment before agreeing with their conclusion that the hyaluronidase alone was of little value for keloids. In the one patient studied, subjective symptoms ceased with a previous series of injections of corticotropin and hyaluronidase, and, therefore, there was little further to accomplish. One wonders too if it would not be more rational to use cortisone or hydrocortisone (compound F) for the local treatments, inasmuch as it is generally accepted that corticotropin acts through its target organ, the adrenal cortex. If it is assumed that the corticotropin may have had little or no direct action, then any favorable effects following the combined treatment should probably be ascribed to the hyaluronidase used as an adjuvant for spreading.

The spreading reaction of Duran-Reynals postulates that an enzyme (or enzymes), hyaluronidase, reacts with a substrate, hyaluronic acid (or substances of similar composition), present in skin. There is evidence, from direct isolation, of the presence of hyaluronic acid in skin. The inference is that it forms a part of the extracellular, interfibrillar ground substance. Watson and Pearce [2] isolated both hyaluronic acid and chondroitin sulfuric acid from the skin in a case of human pretibial myxedema. Histochemical studies have shown that the ground substance and basement membranes of connective tissues contain mucopolysaccharide and mucoprotein complexes that may be removed in part, by hyaluronidase.[3]

Particularly pertinent to the present study appear to be the observations of Duran-Reynals, Bunting, and van Wagenen [4] on the sex skin of macaque monkeys in which a mucin-like material accumulates in the skin and infiltrates collagen fibers to give rubbery folds resistant to local injection. After inoculation with hyaluronidase solutions (bull testis extracts), these folds collapsed after 15 minutes, and the swellings showed little sign of regeneration.

It appeared that local treatment of keloids with hyaluronidase might modify the peculiar (and obscure) circumstances surrounding their appearance and maintenance. If this basic pattern were interfered with, it was conceivable that their extirpation might be permanent. This speculation led to a trial of the enzyme in the treatment of keloids.

METHOD

One hundred fifty units of hyaluronidase was taken up with 1 cc. of 2% procaine solution in its vial and injected at intervals into the substance of the keloid. The injections were planned to infiltrate the entire extent of the lesion. This was difficult to accomplish in the first treatment of old keloids in which resistance to the spreading was high. Later the material spread progressively more easily, and in younger and softer lesions it spread with a rush to distant borders and corners. Tuberculin syringes with a narrow lumen facilitate penetration and need less force; the lock type of syringe and needle is desirable when strong pressures are necessary. Injections and spreading are more readily accomplished when isotonic sodium chloride solution is used instead of procaine; however, these injections are painful, even when the local anesthetic is used. It was found that a drop of a commercial suspension of cortisone added to 1 cc. of enzyme solution practically abolished pain, but this was not used since interpretation of the results would have been obscured. A keloid 15 cm. long, 1.5 cm. wide, and 1 cm. high may be injected with 1 cc. of preparation. The treatments may be given at weekly or twice weekly intervals and should be continued until the lesions soften, as judged

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Histological studies were done in collaboration with H. R. Catchpole, Ph.D., Department of Pathology, University of Illinois College of Medicine.

The hyaluronidase used in this study was supplied by Wyeth, Inc., Philadelphia.

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by the relative ease of injection within the material of the tumor. Simultaneously, there is gross shrinkage of the keloid to three-fourths of its original size. The epidermis then shows redundance by the appearance of fine folds on pinching up the lesion. Eight to 12 infiltrations are generally sufficient to prepare the keloid for surgical excision and repair. At this time the keloid is excised and the edges sutured together or the defect repaired plasti-

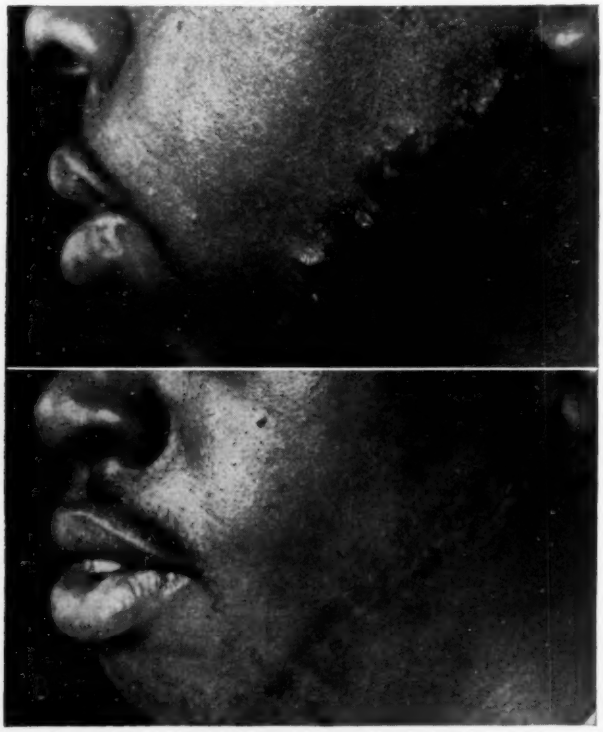

Fig. 1.—*A*, before treatment, keloid at site of healing of a slash wound; *B*, after treatment, scar is linear and supple.

cally. As soon as enough healing takes place, the lesion is given radiation therapy. From 8 to 12 after-treatments are necessary. I give 90 r of x-rays or an equivalent amount of radium at each treatment. Best results follow irradiation of the normal skin for a distance of at least 1 in. (2.54 cm.) beyond the border of the keloid on all sides.

RESULTS

Of the 26 patients studied, 22 had old, hard keloids of several years' duration. One had had surgery before hyaluronidase therapy. Enzyme therapy and radiotherapy succeeded in checking regrowth beyond a little thickening. One patient had keloids that paralleled the mandibles; these resulted from slashings. Three patients had multiple pea and bean-sized lesions from previous acne. Five had the ordinary crab-like type across the chest. Four had ear lobe keloids from piercing for earrings. The rest had bulky keloids on the abdomen, mostly post surgical. Five patients were white, the rest Negro, but skin color did not appear to affect the response to treatment. All results were satisfactory. In one of the largest lesions, which necessitated plastic repair, some thickening and infiltration noticeable to touch developed, but this could hardly be rated as a returning keloid. Spontaneous pain, tenderness, and itching gradually waned and disappeared. In some patients, two treatments were sufficient to eliminate pain, but itching remained longer. Several patients were relieved of their keloids even though previous radiotherapy and surgical repair had failed. Four patients were observed for two and a half years with a recurrence. The total number of patients in whom treatment was completed was 26. A number more did not remain under observation long enough to be counted. Several case histories from the group that completed treatment will be described.

REPORT OF CASES

Case 1.—A Negro, 32 years old, was slashed on both sides of the face four years previously. Keloids developed at the sites of healing (fig. 1*A*). They were excised surgically twice, but subsequent, rapid regrowth took place each time. When I saw him, keloids ⅜ to ⅝ in. (0.96 to 1.59 cm.) thick paralleled both mandibles, extended about the full length of each, and were about ¾ in. (1.91 cm.) mean width. Their consistency was hard, and the patient complained of both itching and pain.

The keloids on each side were injected with 150 units of hyaluronidase in 1 cc. of sodium chloride solution. The material was deposited at intervals along the length of each lesion; punctures were made about a centimeter apart. The needle point was aimed to be about midway in the thickness and breadth at each point. At first, the injections were made with difficulty; much force was necessary to overcome the resistance of the hardened keloid tissue despite the use of small bore tuberculin syringes. I was unable to exert enough force with the ordinary 2 cc. syringe to inject the parts. The patient complained of pain at the moment the injection was made. This immediate shock-pain was not ameliorated by dissolving the enzyme in 2% procaine solution. The injections were made twice weekly, and as they continued the lesions became more

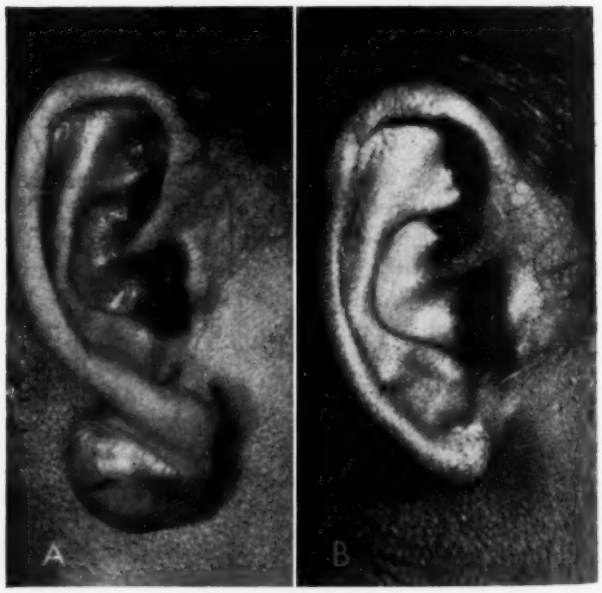

Fig. 2.—*A*, before treatment, cherry-sized keloid on ear lobe of 12-year-old girl; *B*, after treatment, scar is linear and flat and ear appears normal.

resilient and shrank appreciably. Later injections were accomplished progressively more easily and with less pain. After softening of the keloid, the solution could be seen to spread swiftly to nearby points from the needle. Sometimes it moved with a rush to distant parts of the keloid and distended it. After six weeks, one lesion was excised and the edges pulled together and sutured. Healing occurred in nine days, whereupon 90 r of unfiltered x-rays was given to the lesion taking in approximately 1 in. of skin on each side of the linear scar. The

irradiation was repeated twice a week for two weeks and then once a week for six weeks. After one year, the healed scar was linear and supple (fig. 1*B*). The patient no longer complained of pain or itching.

CASE 2.—In a 12-year-old Negro girl, cherry-sized keloids developed on the lobes of the ears (fig. 2*A*), where they had been pierced for earrings four years before. Injections were made at weekly intervals, and after eight of them the lesions were deemed sufficiently softened for surgical removal. Healing was complete in a week. After that, 90 r of unfiltered x-rays was given at weekly intervals for 10 weeks. The scar was linear and flat (fig. 2*B*) after one and one-half years.

CASE 3.—In a 43-year-old Negro woman, a keloid developed in a midline incision from below the umbilicus to above the pubis for a hysterectomy. After four months, the lesion was rope-like in appearance, but resilient and had a reddish cast. The color could be squeezed out of the keloid. The keloid was injected with hyaluronidase solution (150 units to 1 cc. of sodium chloride solution) twice a week. After two weeks, the injections were followed immediately with 90 r of unfiltered x-rays. After four such treatments injections and irradiation were given at weekly intervals for 10 more weeks. The result was a flattened and supple scar of the same width as the original lesion. Itching disappeared after the fourth treatment.

HISTOLOGICAL STUDY

Biopsies were made of untreated and treated keloids. The material was frozen in isopentane, cooled to −160 C, dried in a vacuum, infiltrated with paraffin, and sectioned in absence of any treatment with water. Sections were stained with the Hotchkiss-McManus periodic acid fuchsin method for the demonstration of mucopolysaccharide and mucoprotein substances. Sections from keloid tissue before and after treatment in the same patient were mounted and stained on the same slide.

Material from the keloid in the first case showed the following points. After treatment, the connective tissue stained paler. This was particularly evident in the subepithelial region. The subepithelial basement membrane seemed on the whole to be less prominent and more ragged in appearance; capillary basement membranes were decidedly less prominent than in the untreated lesion. The picture was consistent with the washing out of some constituent or constituents of the ground substance and basement membrane of the treated keloid.

The other major finding related to the cells. Fibroblasts of the treated lesion appeared to be more numerous, and they showed a definitely increased granulation. Almost all high power fields studied showed very numerous cells with deeply staining, distinct granules. Other cells interpreted as immature fibroblasts were seen. The untreated keloid showed less widespread cellularity.

COMMENT

Hyaluronidase is an enzyme occurring in testis, leech extract, snake venom, and many bacteria (streptococci and Vibrio). Its biological effect is to cause spreading of India ink suspensions (or of bacteria) when mixed therewith and injected into the skin. Its chemical action is to cause the breakdown (depolymerization) of the viscous, high molecular weight, mucopolysaccharide hyaluronic acid (present in synovial fluid, bacteria, umbilical cord, and skin) to nonviscous, low molecular weight compounds. Hyaluronidase may also act on other substrates, such as the sulfuric acid esters of polysaccharides.

The ground substance of mesenchyme appears optically homogeneous in the light microscope, but may be organized on a submicroscopic level. It pervades and encloses, "bathes," all cells, structures, and organs. It is locally modified to form basement membrane. It consists chemically of highly polymerized mucopolysaccharides and mucoproteins; these are normally insoluble in water and alcohol. They stain pink or red with the periodic acid-leukofuchsin technique. Under certain conditions, the ground substance may become depolymerized and soluble in water. Water-treated, frozen-dried sections then stain less intensely with the above technique, because soluble carbohydrate-containing residues have been removed. Hyaluronidase breaks down (depolymerizes) some portion or portions of the ground substance of skin, for example. The partially soluble products may at first take up water osmotically and cause swelling and softening of the tissue. Later, the more soluble entities may be lost to the blood stream.

Keloids represent a localized proliferation of connective tissue, i. e., of fibers and of ground substance. The fibers become large and abundant, and eventually the scar is stabilized. Thereafter, it may harden. Removal, however, usually leads to renewed growth and to recurrence of the keloid. Infiltration of the lesion with hyaluronidase produces softening even of old, hard keloids and some diminution in size. This is interpreted as the result of a disaggregation of ground substance components as explained above that leads, first, to uptake of fluid with softening and, second, to removal of soluble residues by the blood. In this way, support of the fibrils by the interfibrillar material is lessened; this may be reflected in the sense of reduced physical support or in terms of greater metabolic availability. Small, recent keloids may be dealt with adequately by enzyme, or enzyme plus irradiation alone. With larger keloids, there may remain a mass irremovable by medical treatment alone. Surgical removal, plus irradiation may complete a cure. It is thought that in the presence of the enzyme a vicious circle of fibrogenesis fails to become established because of the operation of the above factors. Epithelialization proceeds normally. The process of fibrogenesis is held within normal limits, and repair occurs. After several months, no signs of a recrudescence of activity has been noticed.

On the basis of the present findings, it could be postulated that the action of hyaluronidase on the keloid is to cause the breakdown and subsequent removal of ground substance constituents and, at least temporarily, to stimulate the secretory cycle of the fibroblasts. Possibly the efficacy of the treatment may lie in the induction of a relatively quiescent, or exhaustion, or nonfibrogenic phase in the activity of these cells, which may carry through the healing process of the wound.

SUMMARY

Twenty-six patients with keloids were treated with local injections of hyaluronidase and radiotherapy; in 22 this form of treatment was coupled with surgical removal. None of the keloids recurred. Histological study furnished suggestive evidence that the enzyme interferes with the basic pattern of the keloid.

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CLINICAL USEFULNESS OF NEW MILK PROTEIN SUPPLEMENT

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and
Charles I. Fisher, M.D., Chicago

The therapeutic need of high protein dietary intake has been recognized by both surgeons and clinicians for many years. For the internist,[1] above-normal protein intakes by patients are essential in the treatment of many diseases characterized by hypoproteinemia, such as starvation, nephrosis,[2] sprue, pellagra, chronic colitis, certain liver afflictions,[3] and anorexia from a variety of causes. Also, high protein intake is often beneficial in the treatment of diseases in which protein catabolism is increased such as in thyrotoxicosis and prolonged high fevers. To the surgeon, a high protein intake has been associated with adequate wound healing and speedy convalescence.[4] And the geriatrician, who is faced by dietary problems peculiar to the age of his patients, finds adequate protein ingestion a preventative necessity.[5] Not least, the pediatrician is ever mindful of the importance of sufficient protein to meet growth as well as metabolic needs of the younger set. The most available protein is, of course, that present in the ordinary foods of the diet. The protein intake problem is no problem at all for the healthy person with a normal appetite nor is it a problem for the sick patient with a similar desire for food. However, sufficient protein ingestion for those physically or emotionally ill patients with little or no appetite or ability to eat presents a problem of considerable magnitude. As Stieglitz [5a] has pointed out, if a patient weighing 70 kg. (154 lb.) has a deficiency in total serum proteins of 2 gm. per 100 cc., the actual tissue and blood protein deficit would amount to about 2,170 gm. This amount must be supplied over and above the daily protein metabolic requirement of a minimum of 70 gm.

Numerous protein hydrolysates that can be given parenterally are available and appear to be adequate in furnishing the essentials of protein synthesis.[6] However, the preferred mode of administration would be oral. Until about three years ago no such protein supplement possessing all of the features deemed essential was available; as a consequence, an adequate protein supplement was sought and work begun on its development. The list that was compiled of characteristics that such a supplement should possess was as follows: 1. First and foremost, it should include those essential amino acids and peptide linkages to insure protein synthesis by the body. 2. The material should be palatable, a feature not possessed by many available products. 3. It should be highly concentrated, preferably available in liquid form so that it would have minimum bulk and could be drunk instead of eaten. 4. The sodium content should be low in order to be used by edematous or potentially edematous patients. 5. Lastly, the cost of the material should be relatively low.

The starting point, it was decided, particularly in reference to cost, should be milk protein. The process by which protein with the above characteristics is prepared may be briefly summarized as follows:

Skim milk (quality approved for fluid purposes in the New York City market) is passed through ion exchange columns substantially reducing the mineral and vitamin contents of the milk. This step is a continuous process, and the skim milk is maintained in contact with ion exchange resins for from 5 to 10 minutes. The skim milk thus treated is pasteurized and concentrated by evaporation under vacuum. Freshly precipitated, isoelectric casein is thoroughly washed with water and is added to the skim milk prepared as described. The amount of casein added is sufficient approximately to double the protein content of skim milk. Minor adjustments of pH are made by means of potassium hydroxide (10% solution). The material is either spray-dried to the form of a powder or poured into cans and sterilized.

Our purpose is to describe the properties and usefulness of this new dietary supplement of high protein, low sodium content for oral administration (Kralex). The general and specific analyses of the supplement are given in the table. It will be seen that all of the so-called essential amino acids are present. It is also of significance that no fat is present, having been removed by the initial "skimming" process of the whole milk. No detectable cholesterol is present when the supplement is tested by the Association of Official Agricultural Chemists (AOAC) and Schoenheimer-Sperry methods. The caloric content of the liquid is 153 calories per gram. The sodium and potassium contents are extremely low. One noticeable mineral deficiency is iron—this supplement is iron-free. In vitamin content there is a striking deficiency of ascorbic acid. One 6 oz. can of the liquid contains about 24 gm. of protein, 14 gm. of carbohydrate, and about 0.0042 gm. of sodium.

The first experimental question to be answered concerning this new supplement after its inception was whether the material could be used for protein synthesis. The tests on animals are summarized here. The method

From the departments of medicine, Northwestern University Medical School and Wesley Memorial Hospital (Drs. Marquardt, Cummins, and Fisher). From the National Dairy Research Laboratories, Oakdale, Long Island, New York (Dr. Riggs).

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of Cox and Cannon was followed, in which weanling white rats were used for a feeding period of four weeks. The control group, consisting of 11 animals, was fed when they were hungry a "standard" casein diet and the experimental group of a similar number of animals was fed powdered Kralex in the same way. The average initial weight of the control animals was 172.8 gm. and the average final weight was 225 gm., resulting in an average gain of 52.4 gm. In the Kralex-fed group the average initial weight was 172.1 gm., and the average final weight was 217.9 gm., with an average gain of 45.8 gm. In evaluating the availability of this supplement for human protein synthesis, five cases are presented in which it served as the principal source of protein taken for intervals from two weeks to three months. The details of each are contained in the following reports.

REPORT OF CASES

CASE 1.—A 37-year-old white woman was admitted to Wesley Memorial Hospital on July 23, 1951, because of anasarca and dyspnea. Several episodes of edema had occurred previously during the past five years. A diagnosis of chronic glomerulonephritis had been made in 1945 at the time of onset of albuminuria and edema. A history of "acute kidney disease" in childhood was obtained. Physical examination when she was admitted revealed marked swelling of the face and pitting edema of the back, legs, and thighs as well as signs of fluid in the peritoneal and pleural cavities. Blood pressure was 150/90 mm. Hg. She was unable to lie flat in bed and had been unable to eat because of persistent vomiting. A blood cell count made at this time showed the number of red blood cells to be 4,410,000 and of white blood cells 7,650. The hemoglobin level was 14 gm. per 100 cc. Urinalysis revealed that the urine gave a 4+ reaction for albumin.

Analyses of New Supplement with High Protein, Low Sodium Content

General Analysis (%)

Protein (N × 6.38)	13.2	Fat	0.11
Total carbohydrate as lactose	7.7	Calcium	0.0
Potassium	0.18	Chlorine (as chloride)	0.0044
Phosphorus (as PO_4)	0.42	Sodium	0.0022
		Sulfur (as SO_4)	0.0022

Vitamin Analysis (Mg. per 100 Cc.)

Riboflavin	2.9	Choline	0.125
Thiamine	0.31	Vitamin A	0.11
Niacin	0.28	Biotin	0.0018
Pantothenic acid	0.43	Ascorbic acid	0.0
Pyridoxine	0.35		

Amino Acid Content (%)

Alanine	0.45	Lysine	1.05
Arginine	0.50	Methionine	0.33
Aspartic acid	0.97	Phenylalanine	0.65
Cystine	0.05	Proline	1.44
Glutamic acid	2.94	Serine	0.93
Glycine	0.25	Threonine	0.63
Histidine	0.38	Tryptophane	0.16
Isoleucine	0.87	Tyrosine	0.79
Leucine	1.25	Valine	0.92

Treatment for 11 weeks was directed toward elimination of the edema by elevation of the level of blood proteins. This necessitated the use of protein of low sodium content given either parenterally or orally or by both methods. For the first five weeks of treatment she received a 5% solution of protein hydrolysate (Aminosol) intravenously. Because of the severe nausea produced by the normal infusion rate of this preparation, it was possible to administer only from 12 gm. to 25 gm. per day. After the first five weeks of hospitalization the feedings that had been administered parenterally were stopped and she was placed on a regimen of feedings with this supplement alone for a period of three weeks. During this period, the patient's protein intake averaged about 175 gm. per day. During the final two and one-half weeks of hospitalization, low salt foods were added for the first time to the daily 150 gm. of protein. After discharge from the hospital, a 400 mg. sodium diet was well tolerated. Supplemental feedings with Kralex were continued at home, two or three per day (60 gm. to 90 gm. of protein). This dietary regimen was continued to the time of writing, June 3, 1953.

The patient's clinical course was closely correlated with the changes in blood chemistry. The edema was greatest, her weight highest, and her general condition poorest at the time when the level of blood proteins was lowest and the nonprotein nitrogen level highest. A total of 20.5 lb. (9.3 kg.) was lost during hospitalization and at time of discharge she was free of edema. At the time of writing she is still free from edema, is asymptomatic, and is carrying on her usual household duties. It can be seen from figure 1 that with the new oral supplement as the only source of nitrogen this patient's total amount of blood protein rose from 4.67 to 5.60 gm. per 100 cc. and the albumin fraction from 1.14 to 1.34 gm. per 100 cc.

CASE 2.—This 62-year-old white man was admitted to Wesley Memorial Hospital on April 10, 1952, for treatment of the nephrotic phase of chronic glomerulonephritis. The patient had had no illness until he first noted swelling of his ankles two months before entering the hospital. The initial blood cell count revealed 3,620,000 red blood cells, a hemoglobin level of 11.5 gm. per 100 cc., and 10,600 white blood cells with a normal differential count. The initial urine examination showed 1400 mg. of albumin, many white blood cells, and hyaline casts. Urea clearance tests were reported as 21.1% and 19.5% of normal. The 24-hour urinary albumin loss varied from 8.69 gm. to 19.37 gm. The liver profile was within normal limits. The patient showed marked generalized peripheral edema, hepatomegaly, and ascites. Blood pressure was 144/94 mm. Hg.

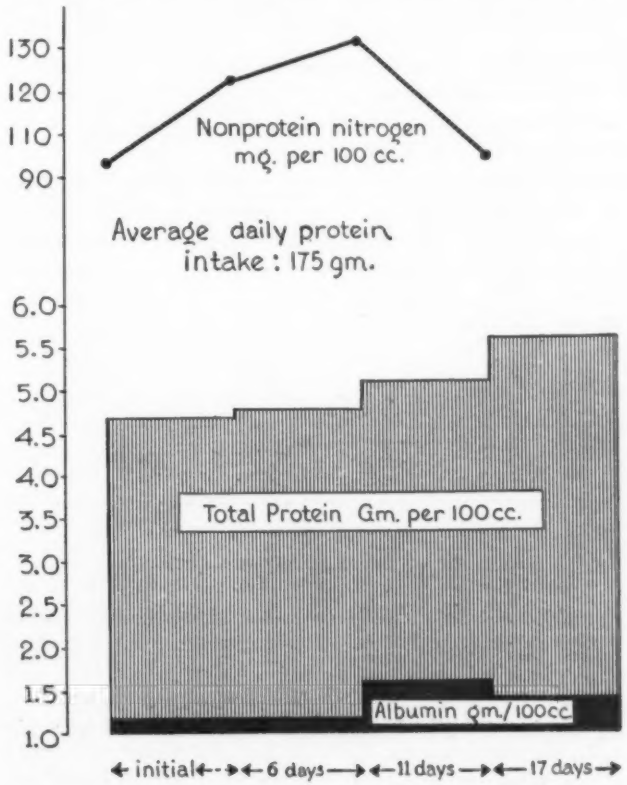

Fig. 1.—Effect of Kralex (new protein supplement) on the amount of serum protein and the albumin fraction of a patient with glomerulonephritis with edema (case 1).

The daily dietary regimen consisted of protein 200 gm., carbohydrate 214 gm., and fat 35 gm. Sodium content was 31.5 mg. All but 20 gm. of the 200 gm. protein intake was supplied by the new supplement. The diet was well tolerated. Ascorbic acid and iron were supplied orally as supplements. After four weeks of the above dietary regimen, the total serum protein level rose from 4.23 gm. to 5.93 gm. per 100 cc., and the

serum albumin fraction also went up from 1.40 to 2.07 gm. per 100 cc. A rise from 21 to 78.7 mg. per 100 cc. was noted in the amount of nonprotein nitrogen. The high protein intake plus other therapeutic measures resulted in marked clinical improvement and a loss of about 46 lb. (21 kg.) of edema fluid.

CASE 3.—A 58-year-old white woman had been treated for chronic cirrhosis for about 12 months prior to her admission to Wesley Memorial Hospital in March, 1952. She was markedly edematous, and bilateral pleural effusion was present as was ascites. She was visibly jaundiced and the liver was hard and palpable. Biopsy of the liver done previously had revealed a portal type chronic cirrhosis. She had been unable to eat for about three weeks prior to her hospitalization but had been able to consume about 1500 cc. of fluids. The liver profile showed marked hepatocellular damage.

The dietary regimen of this patient in the hospital consisted of the supplement, supplying 125 gm. of protein per day, plus 50 to 60 gm. of fruit juices with added sugar. During this three week period the total serum protein value rose from 6.89 to 7.47 gm. per 100 cc. and the serum albumin fraction dropped from 2.52 to 2.25 gm. per 100 cc. The nonprotein nitrogen level rose from 33 to 38.5 mg. per 100 cc. Following this initial three week dietary period, the patient was able to eat more solid food.

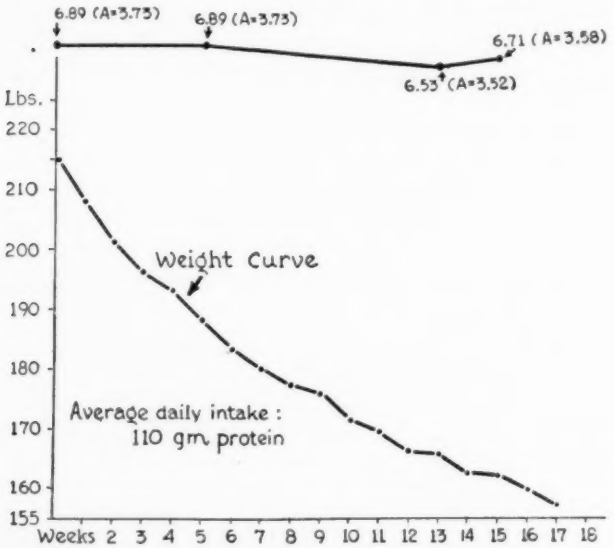

Fig. 2.—Effect of Kralex on the amount of serum protein and the serum albumin fraction of a patient with exogenous obesity showing the corresponding reduction in weight. The upper curve gives the total serum protein and albumin fraction (grams per 100 cc.) (case 4).

By the time for discharge from the hospital about four weeks later, she had lost about 40 lb. (18 kg.) of fluid and was almost free of edema. Kralex, supplying 100 to 125 gm. of protein per day, was continued to the time of writing (June, 1953) as a dietary supplement. At the present time she is carrying on her household duties and has only dependent edema; a recent serum protein determination showed 8.32 gm. per 100 cc. total with 4.30 gm. per 100 cc. of serum albumin. The results of liver function tests remain unchanged.

CASE 4.—An obese white woman, age 41, was admitted to Wesley Memorial Hospital on March 2, 1952, solely for the purpose of reducing her body weight. Urinalysis made at the time of admission revealed no abnormalities, and the liver profile was within normal limits. The only abnormal physical finding noted on admission was the obesity of the patient, 215 lb. (97.4 kg.) for 5 ft. 2 in. (157.5 cm.) of height. Results of tests for fasting blood sugar and nonprotein nitrogen were within normal limits. The initial blood cell count showed 4,800,000 red blood cells, the hemoglobin level was 12.6 gm. per 100 cc., and there were 8,000 white blood cells—the differential count was normal.

For 17 weeks the daily dietary regimen of the patient consisted of about 110 gm. of protein supplied by Kralex plus 100 gm. of sugar. Supplements of ascorbic acid 1000 mg., ferrous sulfate 1 gm., and one multivitamin capsule were also given daily during this 17 week period. The serum protein level in the blood was well maintained. The initial total amount of protein was 6.89 gm. per 100 cc., and the final amount was 6.71 gm. per 100 cc. The serum albumin fraction was 3.73 gm. per 100 cc. when first determined, and the final test revealed 3.58 gm. per 100 cc. This patient felt well during this period and showed no clinical signs of deficiency. (Fig. 2.)

CASE 5.—This 55-year-old white male was suffering from a severely decompensated rheumatic valvulitis and arteriosclerotic heart disease when he was admitted to Wesley Memorial Hospital on Jan. 11, 1952. At this time the patient had generalized anasarca including peripheral edema, ascites, and pleural effusion. The initial blood count was within normal limits and urinalysis showed 600 mg. of albumin. The dietary regimen for a period of four weeks was essentially the same as described for case 2. The initial total amount of protein was 6.71 gm. per 100 cc., and the final 6.01 gm. per 100 cc. When a value was first obtained, the serum albumin fraction was 4.12 gm. per 100 cc., and the final value was 3.60 gm. per 100 cc. The nonprotein nitrogen level increased from 36 to 49 mg. per 100 cc.

ADDITIONAL ADVANTAGES OF USE

In our evaluation of the desirable characteristics of this orally given protein supplement, the second, palatability, should be mentioned. As a liquid, it can be flavored with any number of artificial fruit flavors—chocolate, coffee, butterscotch, or vanilla—to make a pleasant, palatable drink. Many patients who find it difficult or impossible to eat solid food can easily be induced to consume 25 gm. of protein in a glass of this supplement, flavored and served either hot or cold. The liquid or powdered form can be used as a gelatin or as a base for other puddings. It can also serve as a base for many vegetable cream soups, insuring high protein content and palatability. High protein bread has been a gastronomic success when as much as 12% of the dry ingredients was Kralex. The third desirable characteristic of orally given protein supplements seems to be fulfilled by low bulk, high-concentrated protein. The average protein content of a glass of this supplement, flavored, is about 24 gm. Its low sodium content, 0.0022 of solids (see the table), is as satisfactory a level as can be hoped for at the present time. Finally, because of the low initial cost of milk protein as compared with other animal protein as well as simplified methods of manufacture, this should be a low cost source of protein.

Our experience in the use of this protein supplement during the past two and one-half years has extended over a variety of cases. One large group of patients with whom we have used this material liberally has been those with edema accompanied by low serum protein levels. Twelve cases of chronic glomerulonephritis in the nephrotic phase have been clinically aided by its use as the supplemental source of protein. The effects of disabling edema have been in part alleviated by high Kralex intake as an adjunct in the general scheme of treatment of these cases. Also in this group are six patients suffering from cirrhosis. Since the protein-synthesis function of the body is greatly decreased in portal cirrhosis, the effects of a high protein-intake are not too striking clinically. However, we do believe that this supplement has proved an important adjunct in the treatment of cirrhosis. In the geriatric field we have had the opportunity of increasing the daily protein intake of about 2,500 old persons in a geriatric institution (Oak Forest Infirmary, Oak Forest, Ill.) by approximately 35% by its use in powder form in

the making of the institution's bread for three months. "The elderly are prone to suffer from protein deficiency more than from any other form of deficiency." [5a] The high cost of meat combined with the universal difficulty of deglutition in this older group has made our use of the oral supplement in geriatric medicine most successful.

One of its greatest uses in our experience has been in those cases of patients with extreme degrees of anorexia from varied causes. Daily oral protein intakes up to 150 gm. have been accomplished in 25 cases of acute hepatitis by the use of Kralex drinks. In these cases the consumption of food protein, particularly in the early stages of the disease, was impossible and parenteral feedings would have been necessary. We have had the opportunity to use this new supplement in eight patients with chronic, portal cirrhosis who were unable to eat even minimal metabolic requirements of protein. We cannot subscribe in our experience to a low protein regimen in these cases as might be intimated by the work of Eckhardt and others.[3b] In our experience, protein consumption has also been kept near normal by serving drinks made with this supplement in three cases of moderately severe anorexia nervosa. Acute cardiac decompensation often poses a dietary problem, perhaps because of the presence of cardiac cirrhosis, the pressure of an enlarged liver, and gastrointestinal edema. These drinks as supplemental feedings have proved beneficial in maintaining the nutrition of 30 of our patients with decompensated cardiac disease. Anorexia is a clinical problem in most types of terminal or near terminal malignant diseases, and Kralex drinks have proved beneficial palliatives in 20 of these cases.

Among other types of illness in which we believed this protein supplement was of value are three instances of multiple sclerosis and six of chronic, nonspecific, ulcerative colitis. Definite value was seen in its use as the main item in reducing diets for obesity. We have followed closely six cases of stubborn exogenous obesity and have found good to excellent results, with feedings of the supplement.

SUMMARY

The two patients with decreased serum proteins both showed elevation of the levels after three and four weeks, respectively, of Kralex feedings. The patient in case 1 had no other protein source except this supplement and the patient in case 2 had 90% of the necessary protein supplied in this manner. In one case that was characterized by decreased ability for protein synthesis (portal cirrhosis), the amount of serum proteins was maintained and slightly increased after three weeks of Kralex feedings. Two patients with a normal serum protein level had about the same levels after 17 and 4 weeks respectively of feeding with this supplement as the sole protein source or as 90% of the protein source. The low sodium content of this new supplement of protein for oral administration is a definite advantage, especially for edematous patients. Those patients requiring salt can easily add it. It can also be served as a flavored drink to maintain nutrition in various indications. It is acknowledged that Kralex is not a balanced food. It was prepared for use only as a protein supplement, and fortification with lacking vitamin and mineral constituents was purposely omitted.

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ANTIBIOTIC COMBINATION IN TREATMENT OF PNEUMOCOCCIC PNEUMONIA

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During the winter of 1952-1953, a program was developed at the Philadelphia General Hospital to test the efficacy of several new drugs in the treatment of bacterial pneumonia. The program included 283 patients who were admitted to the medical wards with a diagnosis of pneumonia made in the receiving ward. An attempt was made to photofluorograph all these patients at weekly intervals until resolution of the pneumonia was complete or until the correct diagnosis became apparent. Pretreatment studies included, whenever possible, a 14 in. by 17 in. roentgenogram of the chest, complete blood cell count, sputum culture for pyogenic organisms, and blood culture. It was intended to investigate four regimens of therapy as follows: (1) 300,000 units of procaine penicillin administered intramuscularly twice a day, (2) carbomycin (Magnamycin), 500 mg. every six hours given orally, (3) erythromycin (Ilotycin), 300 mg. every six hours given orally, and (4) 500 mg. quantities of a combination containing equal parts by weight of chlortetracycline (Aureomycin) hydrochloride, oxytetracycline (Terramycin) hydrochloride, and chloramphenicol (Chloromycetin), in gelatin capsules given orally every six hours.

Early in the study, it was decided to treat all patients with procaine penicillin and, if there were no definite response within 48 hours, the therapy would then be changed to either erythromycin or to the drug combination, depending on which medical service the patient was. However, it soon became obvious that most of the patients responded to penicillin and, therefore, very few cases were being treated with the other regimens under

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Clinical facilities were given us for this study by the following chiefs of service: Drs. R. S. Boles, T. M. Durant, H. L. Goldburgh, D. W. Kramer, D. N. Kremer, W. G. Leaman Jr., and C. M. Thompson.

Chlortetracycline (Aureomycin) hydrochloride was supplied to us for this study by Dr. J. M. Ruegsegger, Lederle Laboratories Division, American Cyanamid Company. Oxytetracycline (Terramycin) hydrochloride was supplied by Dr. Gladys L. Hobby, Chas. Pfizer & Company, Inc. Chloramphenicol (Chloromycetin) was supplied for this study by Dr. E. A. Sharp of Parke, Davis & Company.

investigation. Therefore, the procedure was altered so that carbomycin, erythromycin, or the combined drugs were administered to the patients when therapy was begun, and, if no response was noted within 72 hours, penicillin therapy was instituted in place of the original treatment.

In the original group of 283 cases in this study, only 95 were considered to be suitable for the evaluation of the various drug regimens. The remaining 188 cases were eliminated from consideration for various reasons, as listed in table 1, either because the receiving ward diagnosis of pneumonia was not corroborated or because roentgenographic studies were not adequate to establish a diagnosis of pneumonia. The criteria used in this study for the diagnosis of pneumococcic pneumonia were as follows: a clinical picture compatible with a diagnosis of primary pneumonia, with isolation of pneumococci from sputum or blood, and, in addition or supplanting the latter, repeated roentgenographic examinations sufficient in number to establish the fact that the pulmonary lesion was reversible to the point of complete, or almost complete, disappearance over a period of weeks.

TABLE 1.—*Reasons for Eliminating 188 Cases from the Study*

Reasons for Elimination	No. of Cases
Tuberculosis (including idiopathic pleural effusion)	45
Negative chest roentgenogram	28
Pneumonia caused by Klebsiella organisms	24
Incomplete roentgenographic studies	21
Cardiac failure	19
Therapy not given according to protocol	11
Neoplasm	10
Death occurring less than 24 hours after admission	5
Others	25
Total	188

It should be noted that the most common cause for removing a case from the series was tuberculosis, which was discovered in 24% of the total 188 cases eliminated. The next most common reason was a roentgenogram of the chest that revealed no evidence of pneumonia, associated with similar physical findings after the patient had been admitted to the ward, which did not support the original diagnosis. The third most common cause was pneumonia associated with Klebsiella organisms in the sputum. An equal number of cases was eliminated because roentgenographic studies were inadequate to meet the criteria outlined above. The fifth reason for removing a case from the study was cardiac failure mistaken for pneumonia. Eleven cases were excluded because therapeutic protocol was not adhered to by the interns. Ten cases of pulmonary neoplasm were eliminated from the series, and there were various less common reasons for eliminating a small number of cases.

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2. Alexander, J. D., Jr.; Eisenberg, G. M., and Flippin, H. F.: Bacteroides Empyema: Report of Case Treated with New Antibiotic Combination, J. Philadelphia Gen. Hosp. **4**: 60 (June) 1953.

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5. Eisenberg, G. M., and O'Loughlin, J. M.: Bacterial Susceptibility to Antibiotics: IV. Activity of Selected Combination of Antibiotics Compared with Activity of Its Separate Components, Am. J. Clin. Path. **23**: 1050 (Oct.) 1953.

LABORATORY STUDIES

In vitro studies at this institution have shown that the antibiotic combination composed of chlortetracycline, oxytetracycline, and chloramphenicol possessed a degree of bacteriostatic and bactericidal activity greater than that evidenced by the same concentrations of these agents when used separately.[1] Clinical trials of this combination in the treatment of Bacteroides empyema,[2] typhoid,[3] and refractory urinary tract infections [4] have been reported. Of 105 strains of Diplococcus pneumoniae studied in vitro by the disk method all were susceptible to chloramphenicol (15 mcg. per milliliter or less), chlortetracycline (4 mcg. per milliliter or less), oxytetracycline (6 mcg. per milliliter or less), the combined drugs (in concentrations one-third of those specified above), and penicillin (0.6 mcg. per milliliter or less).[5] Therefore, it was thought advisable to investigate the clinical efficacy of the combined drugs by comparison with penicillin in the treatment of pneumonia. Since there are various side-effects associated with the clinical use of each of these drugs at their usual dosage, it was felt that a combination of these three agents, in which each drug is present in one-third the usual dosage, might result in fewer side-effects. The purpose of this paper is to report our evaluation of the combined drugs in the treatment of pneumococcic pneumonia in comparison with penicillin. Our evaluation of erythromycin and carbomycin will be reported later.

CLINICAL FINDINGS

In order to determine the comparable factors of the two groups of patients, they were contrasted in various ways. The age range for the former group (38 patients) was 13 to 84 years, with an average of 41 years, and for the latter group (24 patients) was 26 to 86 years, with an average of 48 years. Approximately three-fourths of the patients in each group fell into the age range of 20 to 59 years. The sex and race distribution was also approximately the same in each group. The duration of illness prior to hospitalization was approximately the same in both groups, ranging from 1 to 21 days for the penicillin-treated group, with an average of 6.7 days, and from 1 to 30 days for the group treated with the combination, with an average of 5.9 days. About three-fourths of each group was sick seven days or less. Only five of the penicillin-treated patients received antimicrobial therapy before admission to the hospital, but none of the second group were known to have been treated prior to hospitalization.

The initial white blood cell count ranged from 3,900 to 20,700, with an average of 9,900 in the group treated with penicillin, and from 3,600 to 25,000, with an average of 12,700 in the group that received the combined drugs. Whereas 46% of the penicillin-treated patients had a white count above 10,000, 67% of the second group of patients had a count above 10,000. This differ-

ence is statistically significant, but its clinical importance is not clear to us. The initial temperatures ranged from 98 F to 105 F in both groups, with averages of 101.8 F and 101.9 F respectively. The percentage of patients with a temperature of 102 F or higher was exactly the same in both groups. Bacteriological studies of the sputum from patients revealed the presence of Diplococcus pneumoniae in 81% of 27 persons tested in the first group, and in 78% of 18 in the second group. In blood culture tests for the same organism, of 18 cultures made initially in the penicillin-treated group, 3 were positive (17%), but none of the 18 tests made in the combined drug-treated group was positive. This suggests that the prognosis for the penicillin-treated group was slightly less favorable.

The number of complications (42%) was the same in both groups of patients, when measured as the number of patients having complicating diseases. On the basis of a breakdown of the number of complications (table 2), there were more instances of cardiac disease, alcoholism, anemia (hemoglobin level less than 10 gm. per 100 cc.), and diabetes in the penicillin-treated group, although the differences are not statistically significant. The roentgenographic signs showed some differences between the two groups of patients, in that there were more instances of segmental pneumonia in the penicillin-treated group and more instances of a single patch of pneumonitis in the group in which the drug combination was used. These differences are statistically significant, but it is not possible to determine whether these differences alter the prognosis in these small groups of patients, because the number of unfavorable results is too small. The percentage of cases with involvement of two or more lobes was small in each group but approximately the same.

TABLE 2.—*Incidence of Complications*

Complication	Group Treated with Penicillin		Group Treated with the Drug Combination	
	No. of Patients	%	No. of Patients	%
Cardiac disease	8	21	8	13
Alcoholism	4	11	1	4
Anemia	3	8	0	0
Diabetes	1	3	0	0
Pulmonary embolism	0	0	1	4
Cirrhosis	0	0	1	4
Other	6	16	5	21
Total number of patients with complicating condition *	16	42	10	42

* Several complications sometimes occurred in a single patient.

THERAPEUTIC RESULTS

The duration of treatment was left to the discretion of the various medical services cooperating in this investigation, with the advice that therapy be continued for 5 days. The range was 4 to 27 days and 4 to 26 days, with an average in the former of 10.4 days and of 10 days in the latter group. The results were evaluated by the rapidity of the temperature response, the rapidity of resolution of the pulmonary lesion, the incidence of clinical failure to respond within 72 hours of treatment, the incidence of pulmonary complications, and the mortality rate. After the start of therapy temperatures fell to normal within 48 hours in about 80% of each group. In one penicillin-treated patient a lung abscess developed that failed to heal, and the patient refused surgical intervention. In the second group, no lung abscess developed. There were no instances of pleural effusion. No patients treated with the combination failed to show a response to treatment; two penicillin-treated patients failed to respond until erythromycin therapy was begun with one, and the combination administered to the other.

There were three deaths in the group treated with penicillin and one death in the "combination"-treated group, with percentages of 8% and 4%, respectively. This difference is not statistically significant. Two of the deaths were associated with cerebrovascular accidents, one with a myocardial infarction and one with pulmonary embolism. In only one patient, penicillin-treated, was the pneumonia sufficiently extensive to be a significant factor in his death, and this patient's pneumonia was complicated with a myocardial infarction, diabetes, and acute urinary retention. These facts point up the general principle that with adequate antimicrobial therapy the mortality rate of pneumonia has been brought down to an irreducible minimum and death is usually due to complicating diseases, rather than to the pulmonary inflammatory process. Since chest photofluorograms at approximately weekly intervals were made routinely, the rapidity of resolution of the pulmonary lesion was readily measured. There were no significant differences between the two groups in this respect. Over 80% of the cases in each group were resolved in four weeks and the majority within three weeks. In each group resolution was considered delayed for a small percentage of cases in which more than four weeks was required for the pneumonia to disappear. No significant toxic reactions were noted in either group, although one patient treated with the combination developed a stomatitis, which may have been due to the drug therapy.

COMMENT

It is apparent from the data presented here that the combination of chlortetracycline, oxytetracycline, and chloramphenicol is just as effective therapeutically as is penicillin in the treatment of pneumonia. The combination of drugs has no significant disadvantages and therefore is a valuable substitute for penicillin under certain conditions. From the standpoints of efficacy, cost, and lack of toxicity, no other drug today can do better in the treatment of most pneumonias than penicillin. Nevertheless, as was true for one patient in this series, occasionally a patient fails to respond to penicillin and this combination may fill the need. Furthermore, since it is composed of drugs that are reported to be effective against atypical pneumonia and also against Klebsiella pneumoniae, it has a definite advantage over penicillin in the general therapy of the disease when the etiology of the pneumonia is not clear.

It is felt that the organization of this investigation was of particular value for two reasons. First, it allowed us to compare the merits of a new regimen of therapy with

those of an old, well-established regimen in the treatment of the same type of patient in the same institution. This is important because not only the type of patient varies from institution to institution but even the type of pneumonia differs over a period of years in a single institution, for example, the Philadelphia General Hospital.[6] Although the number of cases included in this series is relatively small, the results are sufficiently clear-cut to yield a reasonably reliable comparison.

Second, emphasis was placed on precise roentgenographic control of the cases, because it is well recognized that many pulmonary diseases such as tuberculosis, pulmonary edema, and neoplasm may clinically masquerade as pneumonia. It is not surprising, therefore, that careful evaluation of the cases diagnosed as pneumonia in the receiving ward forced us to discard the majority and, because of the type of patient usually admitted to this large municipal hospital, it is not surprising that the most common error in diagnosis was tuberculosis. Since it was felt that new regimens of therapy should be evaluated in patients afflicted with primary pneumonia, many patients with pneumonitis secondary to other pulmonary processes were eliminated. This is the reason for the requirement that the series include only those patients whose pneumonia could be shown to be roentgenographically as well as clinically reversible. In the past, an occasional instance has come to light in which a patient treated for pneumococcic pneumonia shows a clinical response but whose roentgenographic follow-up later leads to the diagnosis of tuberculosis. It is obvious from the present investigation that such instances are not isolated. That errors in the initial diagnostic impression of the admitting intern may occur with some frequency is apparent. This is explained by the fact that time in the receiving ward is at a premium and the intern's primary function in admitting patients is to assign the case to the most appropriate department of the hospital rather than to make a diagnosis. The accuracy of the final diagnosis depends on the care taken in the clinical evaluation. As a result of our experience in this investigation, a discharge diagnosis of pneumonia on the chart in the record room should be looked at with suspicion and critically supported with roentgenographic follow-up lest the patient die of unrecognized tuberculosis or neoplasm. This is the policy of the photofluorographic unit in the follow-up of pneumonia cases at this institution and has often borne fruit for both patients and staff.

CONCLUSIONS

In general, the two groups of patients in this series were comparable, but there were minor, statistically insignificant differences, the clinical importance of which it is difficult to determine. Five of the penicillin-treated patients had received some antimicrobial therapy before admission to the hospital. This therapy consisted of penicillin in all cases with a sulfonamide in one instance. Only two of these patients showed a prompt response to hospital penicillin treatment, one died, and the other two responded slowly. This suggests that the prognosis for response to therapy was not quite as good in the penicillin-treated group as in the group treated with the combination. Also, serious complications were a little more frequent in the penicillin-treated group and only these patients had instances of pneumococcemia. The prognosis of the penicillin-treated group was made worse by both of these factors, but in this small series the differences are not statistically significant. The lower average white blood cell count in the penicillin-treated group probably has no influence on the response to therapy.[6] The prognostic influence of the higher proportion of segmental pneumonia and lower proportion of cases with a single patch of pneumonitis in the penicillin-treated group cannot be measured, but it is probably insignificant.

SUMMARY

Sixty-two cases of pneumonia were treated according to two different regimens of therapy. Thirty-eight patients received penicillin intramuscularly, and 24 patients were given orally a preparation composed of equal amounts of chlortetracycline (Aureomycin), oxytetracycline (Terramycin), and chloramphenicol (Chloromycetin). The two groups of patients were comparable in various respects and the results of therapy were equivalent. This combination of drugs is therefore recommended as an excellent substitute for penicillin in the treatment of pneumonia, and it has the advantage of a broader spectrum when the causative agent is unknown. It is emphasized that careful roentgenographic follow-up is important in the diagnosis of primary pneumonia.

255 S. 17th St. (3) (Dr. Flippin).

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Laennec: 1781-1826.—Rene Theophile Hyacinthe Laennec was born Feb. 17, 1781, in Brittany. It was a period of unrest and general discontent, with the French Revolution already rumbling in the distance. . . . In September 1795, at the age of fourteen and a half years, Laennec entered as a student at The Hotel-Dieu at Nantes. In the same month he was appointed Military Surgeon, third class, with his uncle, an evidence of the shortage of medical officers due to the violent character of the times. For the next six years he studied under the guidance of his uncle, and in 1801 went to Paris where he entered The Ecole de Medecine. . . . Laennec's greatest interest at this time seems to have been in morbid anatomy but he contributed many papers of medical interest. For example, in 1804, an essay on hydatid cysts pointed out for the first time the parasitic origin of the disease. . . . Laennec suffered from asthma, insomnia and neurasthenia. His general health was so poor, in fact, that he was on the verge of giving up his career. To the medical mind these symptoms seem explicable on the assumption that he had already suffered from an infection with the tubercle bacillus which was eventually to claim him as its victim at the early age of 45. . . . Laennec's attention gradually became focused upon clinical medicine, and we find him strongly advocating the necessity of correlating clinical observation with morbid anatomy and pathology. In 1816 Laennec was appointed physician to the Hospital Necker which was to be the scene of his greatest work. Admirable as were his researches as a morbid anatomist and pathologist, Laennec's claim to immortality is based upon his monumental work on mediate auscultation which followed his invention of the stethoscope.—G. R. Maxwell, M.D., Rene Theophile Hyacinthe Laennec, *West Virginia Medical Journal,* December, 1953.

USE OF MONOCALCIUM DISODIUM ETHYLENE DIAMINE TETRA-ACETATE IN LEAD POISONING

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and
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The ideal clinical management of lead intoxication in human beings has not yet been achieved. Aub's original studies,[1] demonstrating that calcium and lead behave much the same way in the body, have provided successful therapeutic leads. During episodes of acute intoxication, calcium has been used to force lead from the circulating blood to the skeleton, where it is deposited as a harmless tertiary phosphate. Since such lead can be mobilized, many attempts have been made with varying success to remove small amounts of lead slowly from the body in cases of chronic intoxication. Acid salts, low calcium diet, high phosphorus diet with magnesium sulfate, and potassium iodide have all been used in attempts to de-lead adults with chronic lead poisoning. Because in dilute solutions sodium citrate dissolves the tertiary lead phosphate, the form in which lead is stored, Kety and Letonoff[2] suggested that the soluble complex of lead citrate that has an extremely low dissociation constant might be a safe and effective way to rid the body of lead. They reported favorable results with such therapy. Others report[3] apparently good clinical effect without marked increase in urinary lead excretion. With this background of therapeutic efforts, the appearance of a powerful complexing agent, which might render harmless mobilized lead, is of considerable interest. Such an agent is monocalcium disodium ethylene diamine tetra-acetate (calcium EDTA), which has been recently introduced for clinical trial in heavy metal poisoning.[4] Calcium EDTA is one of a group of compounds known as chelating agents. Chelation is a chemical reaction in which the chelating agent complexes with a metal to form a ring structure. The ring structure thus formed, so tightly binds the metal that it is un-ionized and thus is unable to participate in the usual reactions. Monocalcium disodium EDTA has a strong affinity for lead, and the chemical reaction is depicted in figure 1.

Our experience demonstrates that this agent, administered by vein, is capable of causing a coincidental marked increase in lead excretion with simultaneous decrease in urinary coproporphyrin and a reversal of abnormal hematological findings. We have studied three adult patients with chronic lead poisoning and three normal control patients who have received this compound intravenously.

METHODS

The samples of urinary lead obtained prior to treatment with EDTA were analyzed by a modification of the Ross and Lucas method involving coprecipitation of the lead from the untreated urine with calcium oxalate.[5] During and immediately after EDTA treatment, it was necessary to use a direct ashing method as EDTA present in the urine prevented the precipitation of all of the lead. In both procedures, final determination of lead was made colorimetrically with dithizone. Results of control analyses run on samples of normal urine to which known amounts of lead were added are shown in table 1. In most cases the recoveries were within the expected experimental error allowing for a normal variation of 1 mcg. in the blank.

Measures of urinary coproporphyrin were made by a slight modification of the method described by Maloof.[6] The coproporphyrin content of the sample was estimated from a curve prepared by similar portions of urine to which known amounts of coproporphyrin were added. All quantitation of coproporphyrin was based on comparison with a reference solution containing 5 mcg. of coproporphyrin 1 per milliliter of 1.5 normal solution of hydrochloric acid.[7]

REPORT OF CASES

CASE 1.—A 47-year-old white, married man had worked for the past 25 years in the storage battery industry. He had been exposed over this period to varying levels of lead in the air as judged by air determination. An occasional exposure had occurred without mask to especially hazardous operations. The average air level at the plant in which this man worked varied from 0.18 to 0.38 mg. per cubic meter of air. Five years prior to admission a lead line was noted. Four years prior to admission he had a short episode of illness manifested by fatigue, anorexia, headache, crampy abdominal pain, and anemia. This was interpreted as a bout of lead poisoning, and by staying at home for a short period of time he recovered his good health without treatment. Three years and again four weeks prior to admission he had the same set of symptoms that were again relieved when he left his job temporarily. Because of these repeated bouts of probable lead poisoning, he was admitted to the hospital for treatment with calcium EDTA.

Physical examination revealed a well-developed, well-nourished man in no acute distress. Blood pressure was 110/60 mm. Hg (right arm recumbent). The remainder of the physical examination was within normal limits except for a definite lead line that was present on the upper and lower gums. Per-

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7. Dr. Samuel Schwartz, University of Minnesota, supplied the reference solution used in this study.

tinent laboratory data revealed: white blood count 12,450 with a normal differential; hemoglobin (photocolorimeter) 12.6 gm. per 100 cc.; hematocrit 38.5%; reticulocytes 4.9%; and 51 stippled red cells per 20 high power fields. An osmotic fragility test of the red cells revealed an increased resistance to hemolysis when exposed to hypotonic sodium chloride as compared

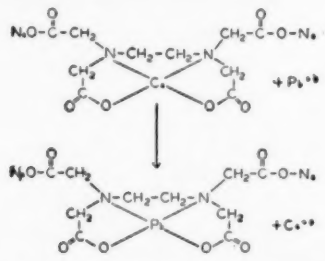

Fig. 1.—Structure formed by monocalcium disodium EDTA and lead.

to controls. A mechanical fragility test showed an increased fragility of the red cells to mechanical agitation as compared to controls.[8] Blood chemistries were all within normal limits.

After seven days of a control study of urinary lead excretion, a daily intravenous administration of 3 gm. of calcium EDTA in 600 cc. of 5% dextrose in distilled water were given

Recovery of Lead from Control Patients by Ashing Method

Volume Take, Ml.	Lead Added, Mcg.	EDTA Added, Gm.	Lead Found, Mcg.	Recovery, %
25	10	0.1	14.5	145
25	10	0.25	10.8	108
25	20	0.25	29.4	147
25	10	0.0	8.8	88
25	30	0.25	29.0	97
25	10	0.1	8.0	80
25	10	0.1	8.6	86
25	10	0.1	9.2	92
25	10	0.1	10.6	106
25	10	0.1	10.2	102

over a two hour period. The day after the first administration he had nausea, vomiting, and three to four loose, watery bowel movements associated with temperature up to 102 F. The administration of calcium EDTA was discontinued for 48 hours, and during this time the patient recovered. The drug was then resumed without untoward symptoms. In view of the nature of the episode and the fact that similar cases were present on the same ward, this was interpreted as an attack of acute infectious gastroenteritis. The patient's excretions of lead and coproporphyrin as affected by calcium EDTA therapy were:

	Lead, Mg.	Coproporphyrin, Mg.
Before, avg./6 days	0.28	2.85
During	7.25	3.50
	0.57*	0.23*
	1.10*	1.10*
	8.10	0.55
	5.20	0.16
	4.30	0.14
	3.50	0.25
	3.75	0.15
After	0.50	0.15
	0.30	0.10
	0.27	0.13

* No calcium EDTA was administered.

After therapy hematological study revealed that hemoglobin was 13.4 gm. per 100 cc., the red cells were not stippled, and mechanical and osmotic fragility had returned to normal. Feeling well the patient left the hospital. He had several follow-up urinary lead determinations, all of which showed an unchanged excretion rate.

8. The mechanical fragility studies were done by Dr. Frank Gardner of Peter Bent Brigham Hospital, Boston, and Dr. Mortimer Greenberg of the Thorndike Memorial Laboratories, Boston City Hospital.

Case 2.—A 46-year-old white married man had been a house painter for 25 years. He had worked chiefly at painting the outside surfaces of buildings, chipping and grinding old paint, mixing his paint, and applying it by brush. In recent years he had used a spray gun. For nine years prior to this hospital admission he had had episodes of a vague illness. These episodes were characterized by weakness of the legs followed by crampy abdominal pains for short periods of time. After a few days away from his work (four to six days) these symptoms completely disappeared. One year and again two months prior to admission, the patient had had an extremely severe bout of crampy abdominal pain associated with weakness of both wrists, most marked on the left (patient is left handed). He was seen by numerous physicians at several hospitals without exact diagnosis. He underwent numerous x-ray examinations and was variously diagnosed as suffering from alcoholism, psychoneurosis, and toxic neuropathy of unknown origin. Two months prior to admission he was hospitalized at the Boston City Hospital, where a definite diagnosis of lead poisoning was made. At this time the weakness of the extensors of the upper extremities resulted in a bilateral wrist drop. He was admitted to the Massachusetts General Hospital for treatment with calcium EDTA.

Physical examination revealed a well-developed, well-nourished white man in no acute distress. The blood pressure was 120/80 mm. Hg (right arm recumbent). There was a definite lead line on both upper and lower gums. The remainder of the positive physical findings were confined to the neurological examination. There was decreased sensation to pin prick on the dorsum of both hands and forearms up to the level of the elbows. Marked weakness of extension of the wrists and fingers was present and was more pronounced on the left. Tremor was noted only in an effort to extend wrists and fingers. There was no loss of position or vibration sense. Radial biceps and triceps reflexes were absent bilaterally.

Laboratory data on admission revealed a hemoglobin of 11.5 gm. per 100 cc.; 30 stippled cells per 20 high power fields; and white blood count of 7,000 with a normal differential. An osmotic fragility test of the red cells revealed an increased resistance to hemolysis when exposed to hypotonic saline as compared to controls. A mechanical fragility test showed an increased fragility of the red cells to mechanical agitation as compared to controls. Blood chemistry determinations and a routine urinalysis were normal.

After a five day control period, the patient was given 3.5 gm. of calcium EDTA intravenously daily for seven days. This was given in 600 cc. of 5% dextrose solution over a two hour period. There were no untoward symptoms noted during the treatment period. The patient's excretions of lead and coproporphyrin as affected by calcium EDTA therapy were:

	Lead, Mg.	Coproporphyrin, Mg.
Before, avg./4 days	0.05	1.30
During	0.79	1.60
	1.27	0.95
	1.32	0.35
	1.54	0.25
	1.19	0.20
	1.10	0.10
	0.52	0.10
After	0.33	0.10
	0.06	0.10

After therapy hemoglobin was 12.5 grams per 100 cc. The red blood cells were not stippled, and mechanical and osmotic fragility returned to normal. At the end of this five day period there was obvious increased strength in the left hand. There was also decreased pain on flexion of the left wrist and also on pronation and supination of the left forearm. After discharge from the hospital within a month and without further treatment, the patient was able to go back to painting, using leather wrist supports, which he has discarded at the present time. Because of his neuropathy, the patient was persuaded to discontinue work involving toxic lead compounds.

Case 3.—A 50-year-old structural steel painter of Greek extraction was admitted to Massachusetts General Hospital. Because of language difficulties, the precise character of the

work exposure was hard to obtain. The patient had been a painter for many years and in the past two years had been painting structural steel with red lead paint, working on a small enclosed platform without a mask. He used as much as 5 to 8 gal. of paint per day. No history of chipping or sanding could be elicited, and during the winter months he did not work at all. Two years prior to admission pain developed in his wrists and dizziness. At this time urinary lead excretions revealed abnormally high amounts. Because of this he discontinued work for six weeks and all symptoms were relieved. Due to seasonal lay-off, he did not return to work for six months. During the period of this illness, he did not receive any compensation, which caused resultant bitterness and increased difficulty in handling the episode we are reporting. He returned to work and was perfectly well until three months prior to admission when he noted the onset of crampy, intermittent abdominal pain with weakness of wrists, knees, and hips. Associated with the weakness, he noted pains referred to many joints, chiefly in the hips, low back, knees, and ankles. The pains were sometimes sharp and stabbing in nature, always intermittent and varying in intensity. The weakness and pains increased and were accompanied by dizziness and severe bilateral frontal headaches. These symptoms became so severe that the patient collapsed at work and was hospitalized in another hospital. This acute episode took place nine weeks before admission to the Massachusetts General Hospital.

At the time of the previous hospitalization the hemoglobin was 10 gm. per 100 cc., and the blood smear showed numerous stippled cells. He had anorexia, vomited many times, and complained of a metallic, bad taste in his mouth. There was no constipation. He was treated symptomatically, and all symptoms lessened in intensity but on admission to this hospital the aches and pains, weakness, and dizziness remained.

Physical examination revealed a well-developed, underweight, white man who appeared his stated age and who was extremely anxious but in no acute distress. Positive physical findings included a definite lead line on both upper and lower gums. A moderate dorsal kyphosis was present with slight scoliosis to the right. Examination of the heart was within normal limits; blood pressure was 130/80 mm. Hg (right arm recumbent). Abdominal examination was negative. Neurological examination demonstrated weakness of both upper extremities that was minimal in extent and some weakness of the calf muscles. No sensory defect could be found. A complete muscle examination by the department of physical medicine corroborated these findings, showing definite weakness of the extensors and the flexor muscles of the wrists and fingers. Minimal weakness was also demonstrated for the shoulder girdle muscles and foot and toe flexor and extensor muscles. Stippling of the red blood cells was one per high power field. An osmotic fragility test of the red cells revealed an increased resistance to hemolysis when exposed to hypotonic sodium chloride as compared to controls. A mechanical fragility test showed an increased fragility of the red cells to mechanical agitation as compared to controls. After three days of a control period, the patient was given 4 gm. of calcium EDTA in 450 cc. of 5% dextrose and water intravenously over a two hour period for five consecutive days. During this time his lead and coproporphyrin excretions as affected by calcium EDTA therapy were:

	Lead, Mg.	Coproporphyrin, Mg.
Before, avg./2 days	0.37	2.18
During	4.45	2.30
	13.00	2.55
	10.50	1.00
	7.20	0.65
After	0.58	0.60
	0.37	1.40

No untoward symptoms developed in spite of the relatively large amount of lead excreted. The general symptoms of loss of strength and vague muscle and joint pains persisted. Because of the patient's mental attitude and language barrier, exact evaluation of his symptoms could not be accomplished. The patient was discharged and readmitted one month later for readministration of this agent, during which time complete metabolic studies were done. These findings will be reported in a succeeding paper.

The patient continued to complain of pain in the hip joints, right leg, and both shoulders. His hemoglobin was 14 gm. per 100 cc., and he declared that he was too weak to work. There is no stippling of the red blood cells, and mechanical fragility and osmotic fragility are normal. He still excreted 0.39 mg. of lead per liter, six months after a vacation from lead exposure. By orthopedic support and rehabilitating exercises, we are attempting to get him to the point of returning to work. We are unable to state that his symptoms are due to chronic lead intoxication. No doubt some of his symptoms are due to his own concept of what he is willing to do and his feeling that he has been unjustly treated in the past.

NORMAL CONTROL PATIENTS

In addition to these three patients with chronic lead intoxication, we have studied three normal patients. All three controls had no undue lead exposure. Two were physicians and one was a female dietician. The agent was given on only one day. Lead excretions were studied before and after therapy. No untoward symptoms or abnormal blood chemistry values followed administration of the agent. The excretion levels in milligrams per day were as follows:

	Day 1	Day 2*	Day 3	Day 4
Male	0.09	0.65	0.15	0.05
Male	0.05	0.29	0.05	0.04
Female	0.04	0.45	0.05	0.05

* Calcium EDTA given.

COMMENT

As seen in figures 2 and 3, the lead content of the urine has been increased manyfold after administration of calcium EDTA. With this increased excretion of lead, there was a decrease in the urinary coproporphyrin. After therapy was discontinued, there was an immediate return of the urinary lead to pretreatment values in the patients of cases 1 and 2, whereas coproporphyrin values decreased and never returned to the pretreatment level. In case 3, there was a return of coproporphyrin to pretreatment level. A second administration of calcium EDTA in case 3 once again produced an increase in the urinary lead excretion and a decrease in the coproporphyrin excretion, and on this occasion the coproporphyrin did not return in six days to the pretreatment level. All three patients showed decreasing amounts of lead excretion on succeeding days of treatment.

All three patients had anemia with stippled cells and an increased resistance of the red cells when exposed to hypotonic sodium chloride. There was also increased mechanical fragility. Aub and co-workers [1] discovered that the major action of the lead on the red cell was at the surface. Lead combined or was adsorbed onto the membrane and produced increased permeability, loss of potassium ion, and shrinkage of the cell. This shrinkage made the cell more susceptible to mechanical damage and at the same time increased resistance to hypotonic saline. He therefore concluded that the direct action of lead on the cell membrane with consequent hemolysis was the cause of the anemia. This view was strengthened by the experimental studies of Kench and co-workers [9] with lead-poisoned rabbits who exhibited large increases

9. Kench, J. E.; Gillam, A. E., and Lane, R. E.: Haemopoiesis in Lead Poisoning, Biochem. J. 36: 384, 1942.

of coproporphyrin excretion in the urine. This increased excretion both in humans and animals was thought to be due to the destruction of red blood cells. Recent studies by Grinstein and co-workers,[10] using N-15-tagged aminoacetic acid (glycine) showed that lead-poisoned rabbits excrete large amounts of coproporphyrin 3 but that this excretion does not coincide with the lowering of the hemoglobin. The increased coproporphyrin 3

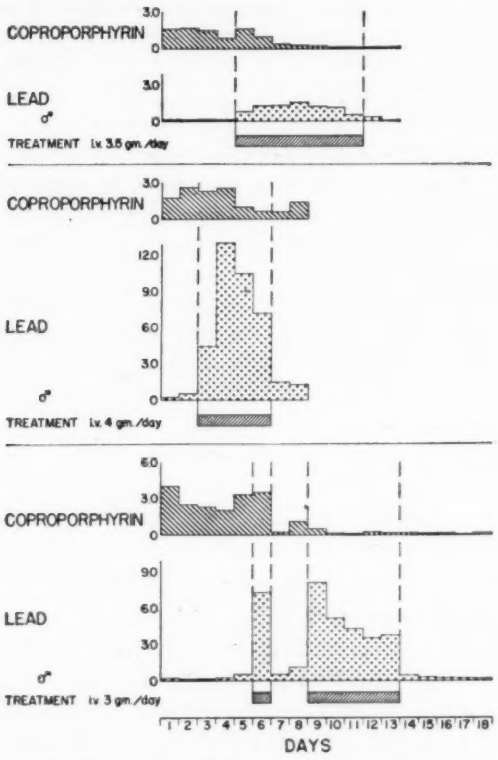

Fig. 2.—Lead excretions of patients with plumbism after administration of calcium EDTA. Urinary excretion was measured in milligrams per day. Reading from top to bottom are cases 2, 3, and 1.

probably does not come from hemoglobin destruction but is a direct result of the lead on coproporphyrin synthesis. The exact cause of the anemia in lead poisoning still remains to be explained, but the evidence at hand suggests that it is a combination of hemolysis and toxic interference with hemoglobin synthesis.

During therapy with calcium EDTA all evidence of lead effect on the red cell was improved. All patients showed a rise in hemoglobin with a complete disappearance of stippled cells and mechanical and osmotic fragility curves returned to normal. This provides excellent evidence that coincident with dramatic increase in urinary lead, following calcium EDTA, toxic effects of lead on the red cell disappear. At the same time, the urinary coproporphyrin levels decreased. This is valid proof that the mobilized lead bound to calcium EDTA is unable to produce the usual toxic effects of circulating lead on the red cell and on porphyrin synthesis.

10. Grinstein, M.; Wikoff, H. M.; de Mello, R. P., and Watson, C. J.: Isotopic Studies of Porphyrin and Hemoglobin Metabolism: Biosynthesis of Coproporphyrin III in Experimental Lead Poisoning, J. Biol. Chem. **182**: 723, 1950.

11. Use of Calcium Ethylenediaminetetraacetate in Treating Heavy-Metal Poisoning; Report of a Conference held at Massachusetts General Hospital, A. M. A. Arch. of Indust. Hyg. **7**: 137 (Feb.) 1953.

The effect of calcium EDTA on lead excretion is remarkable. From the data it can be seen that in case 2, on the third day of treatment, the lead excretion was 26 times the average concentration obtained just prior to treatment. In case 1, the corresponding ratio is 29 to 1. The first treatment in case 3 resulted in a maximum urinary lead concentration of 34 times the pretreatment average. The second treatment, with a smaller dose, produced a nineteenfold increase. With the controls who received one dose of calcium EDTA the increase in lead excretion was less, being approximately eightfold. It is interesting to note that the peak urinary lead concentration of each of three controls following EDTA administration was about 0.45 mg. per liter. As noted, the samples obtained immediately after EDTA treatment ceased were analyzed both by coprecipitation and by ashing methods. In all cases, the first samples showed much less lead by the former than by the latter procedure, indicating the continued presence of EDTA or its lead compound in the urine. Gradually, the lead value obtained by the coprecipitation method increased so that

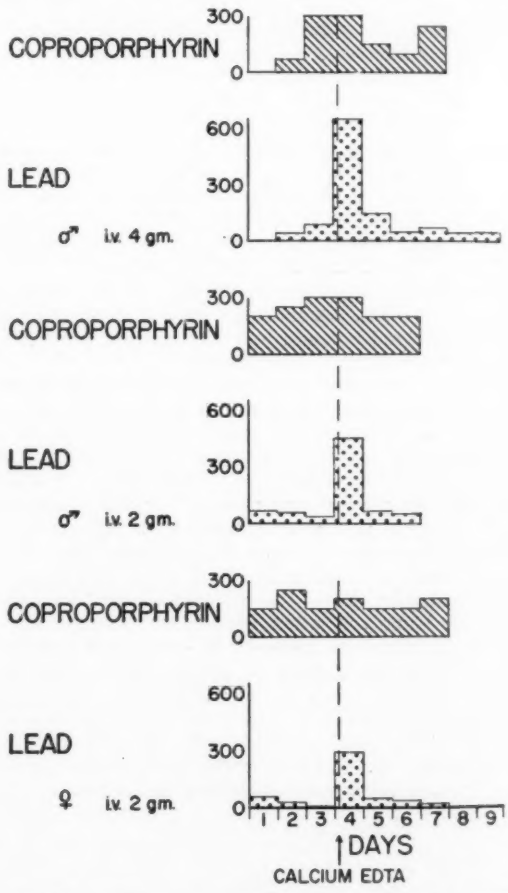

Fig. 3.—Lead excretion in control patients. Urinary excretion is measured in micrograms per day.

after several days it equalized the concentration found by the ashing method. The data demonstrate that EDTA or the EDTA lead complex is not entirely excreted in the first 24 hours and that small amounts are present for one to two days. Animal evidence, reported by Foreman [11] shows that calcium EDTA tagged with C-14 in the methyl position perfuses freely throughout the body tissues and body water with equal distribution within

one and one-half hours. All of the tagged EDTA is excreted within the first 24 hours in the urine. The renal excretion mechanism is similar to diodrast, according to Foreman.

The effect of the treatment on the coproporphyrin excretion of these three patients, while somewhat less spectacular, may be more important clinically than its effect on lead excretion. In all of our cases the coproporphyrin excretion decreased the day following the first treatment with EDTA and continued to fall as long as the drug was administered. In cases 1 and 2 it reached normal values. There seemed to be a tendency for the coproporphyrin to increase again, however, but not to pretreatment values. This was noted immediately in case 3 after the patient's first treatment, and in case 1 the increase did not appear for at least five days but was definite after three weeks. This increase in coproporphyrin excretion after treatment is in contrast to the lead excretion, which remained constant or even decreased slightly during the same period. If the patient excreted lead at the pretreatment rate, the amount of lead that was eliminated by the treatment of the patient in case 2 would have taken 160 days. In case 1, it would have taken 116 days and, in case 3, 92 and 77 days.

SUMMARY AND CONCLUSIONS

Favorable results in treating chronic lead poisoning with monocalcium disodium ethylene diamine tetraacetate (calcium EDTA) given intravenously are reported in three cases. The effect of this drug reopens the question of the usefulness of deleading in handling chronic lead intoxication. There can be little doubt from our experience that calcium EDTA acts to increase the excretion of lead when it is present in the body. In none of our three cases did we have a real chance to test its ability to relieve the symptoms of acute lead poisoning. In cases 1 and 2, we believe that the clinical course was favorably influenced by using the drug, admitting freely that a vacation from lead exposure would in time have produced the same result. In addition, the remarkable lead excretion levels produced with coincident decrease in coproporphyrin excretion and reversal of the hematological abnormalities appear to document the favorable effect of this drug on the toxic effects of lead. It is also important to note that the increased excretion of lead showed decreasing amounts over a period of sustained administration of the compound. This may mean that lead exists in the body at different states as regards its ease of mobilization and that prolonged therapy might eventually result in no or very slight excretion of lead. At present, we are investigating this possibility for this data suggests that intermittent treatment with this agent may be the method of choice, to obtain high and harmless urinary lead levels. Calcium EDTA acts to make a lead complex by exchanging the calcium for lead to form a tight chelate that can circulate within the blood vascular system without any apparent toxicity. As far as we can tell, we have in no way harmed our patients. In animals, calcium EDTA is not metabolized and is excreted almost completely within a matter of hours. Our studies on human beings, however, show that calcium EDTA effect in chronic lead poisoning probably persists for a few days after cessation of therapy, a fact that needs further explanation. Since only about 1% of the administered calcium EDTA is recovered as lead EDTA, it has been suggested that trace metals may be made complex and result in damage to enzyme systems. Such possibilities cannot be disproved by our present data. The preferential behavior of calcium EDTA, however, probably rules out deleterious effects on magnesium. Since the periods of treatment are short, there is probably an excess of trace metal available to the body to compensate for any drug induced loss. Prompt increase in the lead excretion after a single intravenous injection of calcium EDTA given to three normal control patients suggests that small amounts of stored lead can be mobilized by this agent. The rapid return to pretreatment levels of urinary lead and coproporphyrin when calcium EDTA is discontinued needs further study.

CLINICAL NOTES

AN INEXPENSIVE TERMINAL HEATING UNIT FOR THE SMALL HOSPITAL

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Commander G. C. Calderwood
Lieut. C. M. Trossman, (MC), U.S.N.
Commander J. F. W. King (MC), U.S.N.R.
Lieut. J. B. Ormiston (CEC), U.S.N.R.
and
Lieut. Commander W. L. Dentler (MSC), U.S.N.
Quonset Point, R. I.

In proportion to its size, the infirmary at the United States Naval Air Station, Quonset Point, R. I., has a large dependent service. About 90 deliveries are made a month. The nursery has a capacity for 20 full-term infants. Insofar as possible, the standards of the American Academy of Pediatrics are followed in the management of the nursery. In this connection a bacteriological study of the formulas was instituted in March of 1952. At this time the old aseptic technique method was used in formula production. Bottles and utensils were washed, wrapped, and autoclaved prior to use. Nipples were boiled before being used. The ingredients in the formula were boiled water and liquid Similac (liquid form of Similac powder containing 3.35% fat, 6.61% lactose, 1.72% protein, and vitamins and minerals) or Lactum (evaporated milk with maltose and dextrins and added vitamin D). Thus the principal source of contamination would be the hands of the persons making the formula. Another source of contamination was a glass jar in which nipples were often stored after they had been boiled. The study was conducted by sending random samples of formula, packed in

The views expressed in this paper are those of the authors and not necessarily those of the Navy Department.

Lieut. J. B. Ormiston designed the unit, and the construction was done by George Dubois. Louis Iacobucci, senior bacteriologist of the Milk Laboratory of Rhode Island, conducted the formula studies.

Mead Johnson & Company supplied Lactum, and M & R Laboratories supplied liquid Similac.

ice, to the Milk Laboratory of the state of Rhode Island at Providence, 20 miles away. The bacteriological studies showed that 54% of the formulas made by the aseptic technique were contaminated. The degree of contamination increased as the weather became warmer. A decision was made to replace the aseptic technique with the terminal heating [1] method of formula production. A unit was needed that could process at least 120 4 oz. (120 cc.) bottles at one time. The unit had be compact enough to fit into available space and reasonable enough in price to fit into the infirmary budget. The cost of suitable commercially available apparatus ranged from $1,474 to $4,005. The least expensive apparatus was too small. A waiting period of at least 10 months was involved in the installation of the more expensive unit, which had a capacity adequate for our needs. After a study of the concepts of terminal heating and a review [2] of the types of apparatus available, our public works department attempted to design and build a suitable apparatus.

USE OF FLOWING STEAM

Early in the development of the apparatus, the use of steam at 230 F under pressure [3] in contact with the formula was abandoned in favor of the use of flowing steam at 212 F at atmospheric pressure.[4] The use of steam under pressure was abandoned because (1) with one exception, authorities agreed that the use of pressurized steam for a shorter period produced no better results than the use of flowing steam under atmospheric pressure for a longer period; (2) the advantages of the shorter holding period using pressurized steam was offset by the time used in building up and releasing the pressure before and after the holding period; (3) the use of pressure in the apparatus necessitated the use of heavier fittings and material than were available to us and introduced an operating hazard that we wished to avoid; and (4) we planned to use a commercial formula product, Lactum or liquid Similac, which would be sterile anyway. The principal sources of contamination would be in the operator's hand, the nipples, nipple covers, and other utensils. This nonformula source of bacterial contamination was important enough to cause the high counts noted in formulas that had been made from Lactum and liquid Similac by means of the inadequate aseptic technique. Whether our terminal heating unit would be adequate if pasteurized milk were used in place of the sterile commercial formula we plan to investigate later.

DETAILS OF CONSTRUCTION

The technical description of the apparatus built here is as follows: The sterilizer chest for sterilization of infant feeding formulas contained in feeding bottles should provide a means by which the desired number of bottles may be placed in trays, the trays and bottles submerged in water, and the water heated to, and maintained at, the desired temperature for the length of time necessary for the sterilization to be effected. To accomplish this purpose, a chest having a hinged cover was manufactured of 11 gage stainless steel. So that the chest could hold 136 bottles at one time, it was decided that the most suitable inside dimensions were 24¼ by 36 by 12¼ in. The top edges of the four sides of the steel box were flared out at 90 degrees to form a 1 in. wide horizontal lip, which would serve as stiffening and which would eliminate the sharp edges of steel. A similar 1 in. vertical lip was added around the hinged cover, and, for the necessary additional stiffening, a 4 in. by 1 in. channel of stainless sheet steel was made and riveted to the under side of the cover. The cover has no latches and simply lies in place when closed. A suitable wood handle was provided for opening and closing the cover. Six stainless steel trays for holding the bottles were made with perforations to allow adequate circulation of water. These trays are 23½ in. long by 4¾ in. wide by 3¼ in. high and have a lifting handle at each end made of strips of stainless sheet steel, 1 in. wide, each handle being bent inward at the top end to form a half circle for a finger hold. Condensation, which forms under the cover and drips off the bottom of the 1 in. vertical lip of the cover, is drained away by a 1½ in. wide by 1 in. deep stainless sheet steel channel trough all around the vertical sides of the chest just under the horizontal 1 in. wide lip. This trough was pitched to drain to a single low point, and a drain pipe was provided and connected to the sanitary sewer system to drain away the condensation.

Water was supplied to the sterilizer by a ½ in. copper pipe and control valve connected to the regular domestic hot water supply. A ¾ in. copper pipe drain with control valve was installed to provide for complete draining off of the sterilizing water. A ¾ in. copper pipe safety overflow drain with its opening 5½ in. above the bottom of the sterilizer was also installed. For heating the sterilizing water, a ¾ in. copper tube heating coil, approximately 12 ft. in length, was bent and formed to lie flat on the bottom of the sterilizer. The two ends of this heating coil protrude through one of the vertical end panels just above the bottom and are soldered in place to provide a watertight joint. A steam line capable of delivering 30 lb. per square inch was connected to one end, and the other end was provided with a steam trap and connected to the condensate return system of the building. Four lengths of stainless steel channel, 1¾ in. wide and 1 in. deep, were provided and laid on the bottom of the sterilizer to provide a platform to support the sterilizing trays and to protect the copper tubing heating coil. The steam service to the heating coil was provided with a manually operated steam valve and a Powers no. 11 regulator valve for automatic control of the sterilizing water temperature. A steam temperature gage, reading from 60 degrees to 240 degrees F, was installed directly on the sterilizer cover. This sterilizer was designed, constructed, and installed to meet an imperative, immediate need. Commercially manufactured equipment to accomplish the purpose in the quantity desired was found to be very expensive, and it could be attained only after a delay of approximately

1. The Modern Milk Formula Laboratory, Erie, Pa., American Sterilizer Company, 1952. Lowe, R. H.: Formula Room: Experiment in Terminal Sterilization, Mod. Hosp. **69**: 48 (Aug.) 1947; Terminal Sterilization, of Formulas, ibid. **71**: 58 (July) 1948. Hodson, A. Z.: Terminal Heating of Infant Formula: Retention of Ascorbic Acid in Orange Juice, J. Am. Dietet. A. **26**: 177, 1950.

2. Wallace, H. M., and others: Formula Room for Newborn Infants in Lying-In Hospitals, J. Ped at. **39**: 337, 1951. Wallace, H. M.; Abramson, H., and Losty, M. A.: Formula Rooms for Newborn Infants in Lying-In Hospitals: Preliminary Study, Pediatrics **1**: 758, 1948.

3. Finley, R. D.; Smith, F. R., and Louder, E. A.: Terminal Heating of Infant Formula: II. Bacteriological Investigation of High-Pressure Technique, J. Am. Dietet. A. **24**: 760, 1948.

4. Smith, F. R.; Finley, R. D.; Wright, H. J., and Louder, E. A.: Terminal Heating of Infant Formula: I. Bacteriological Investigation of Low-Pressure Technique, J. Am. Dietet. A. **24**: 755, 1948.

one year. The cost of all materials and labor totaled about $350. The total time spent on the project, including designing, experimenting, constructing, and installing, was about one month.

PROCEDURE FOR USE

At the time the apparatus was installed, the following regulations for formula production by terminal heating were instituted.

Wash, scrub, and thoroughly rinse all bottles, nipples, and glass covers with a suitable detergent. In washing nipples evert them and do a thorough job. The success of this method depends on the thorough washing and rinsing of bottles, caps, and nipples. No method of terminal heating can kill bacteria embedded in a scum or ring of milk in a bottle, bottle cap, nipple cover, or nipple. Pour sterile water from autoclave mixed with formula into bottles. Place nipples on bottles. Put glass nipple covers on loosely. When using Evenflow caps, apply caps loosely; otherwise bottles will crack when heated. Fill sterilizer with hot water to overflow level. Turn off hot water. Place bottles in racks. Lower filled racks into sterilizer. Turn steam on "full." It will take about 30 minutes for sterilizer to reach the holding temperature of 212 F. When temperature gage on lid of sterilizer reaches 212, begin timing the formula. Formula should remain in sterilizer for 30 minutes at 212 F. After this period, open drain and let out scalding water. Close drain and fill to level of overflow pipe with cold water. After five minutes in cold water, remove formula, tighten nipple covers or caps, and place in icebox at 40 to 45 F.

Once a week the unit is taken apart, scrubbed down, and polished. This is to prevent the growth of thermophilic organisms or maintenance of viable spores beneath the mineral deposit that accumulates on the metal surface after a week of operation.

EFFECTIVENESS OF NEW UNIT

The formulas produced by our terminal heating unit were studied in the same manner as those produced by the aseptic technique. The results were gratifying because 31 consecutive cultures covering a period of about 10 months showed no growth. Because of the interest and cooperation of the Milk Laboratory we were able to conduct a detailed bacteriological study of the nipples. Washed unboiled nipples were attached to the bottles before they were terminally heated. We felt that sterilization or near sterilization (less than 25 nonpathogenic organisms per cubic centimeter of wash in the standard nipple test) could probably be achieved during the 30 minute period when the nipple was subjected to the heat of the terminal heating process. Boiling of 120 nipples prior to their utilization not only subjected them to excessive wear but was a time-consuming process. Bacteriological tests substantiated our viewpoint. Tests on the nipples using the standard procedure and an additional procedure where some nipples were inundated in the sterile wash for 24 and 48 hours prior to being plated showed no growth. Of course, the ingredients of the formula bottle were essentially sterile to begin with. Whether or not boiling of the nipples could be eliminated if nonsterile pasteurized milk was used in the bottles we do not know.

COMMENT

The terminal heating unit described meets the requirements of such a device by consistently turning out formulas and nipples with a bacteriological count of less than 25 nonpathogenic, noncoliform organisms per cubic centimeter. Over 31 separate studies of the formula and studies of the nipples have shown no growth of any organisms. The apparatus and the protocol for its use were intended to be used with a formula that is relatively sterile to begin with; whether it would prove satisfactory if unsterile pasteurized milk were used, we plan to investigate later. However, since these canned sterile formula products are inexpensive, easily stored, and readily available, the apparatus and method described may solve the problem of the small hospital or infirmary.

SUMMARY

The inadequacy of the aseptic technique of formula production was proved by formula cultures made weekly. Difficulty was encountered in purchasing a satisfactory terminal heating unit due to the high cost and delay in delivery. The problem was solved by designing and building a suitable unit that is essentially a large well-constructed water bath heated by steam coils in which formulas may be held at 212 F at atmospheric pressure for 30 minutes. The unit can be built by any competent metalsmith for about $350. This method of formula production has resulted in the production of sterile formulas and sterile nipples for over 10 months.

Infirmary, U. S. Naval Air Station (Lieutenant Trossman).

THERAPY OF SYNCOPE

Alfred Soffer, M.D., Rochester, N. Y.

Therapy may lag considerably behind the academic confirmation of the necessity for change, since established custom so often impedes progress. This clinical fallibility explains the recent well-intended but misdirected attempts of a dental colleague of mine to correct the state of vasomotor collapse after a procaine reaction. The dentist made earnest efforts to force the patient to assume the head-between-the-knees position even though the danger of the aspiration of foreign bodies was not present and although the dental chair offers an ideal opportunity to permit the rapid assumption of a supine or Trendelenburg position.

The present misguided stress on abdominal binders, sympathomimetic drugs, and the head-between-the-knees position is due to underestimation of the role of the lower extremities in the production of vasodepressor syncope. Our attempts to interpret man's behavior in the light of animal experimentation is largely to blame for this situation, for in animals postural pooling of blood may occur primarily in abdominal organs. In man, however, gravitational pooling of blood in the lower extremities assumes a far greater significance because of the greater relative size of man's legs. The transient vasodilatation of deep-lying vessels that characterizes vasodepressor syncope permits an even greater accumulation of blood in the legs, because in the upright position vascular changes occur that are comparable to the effects of

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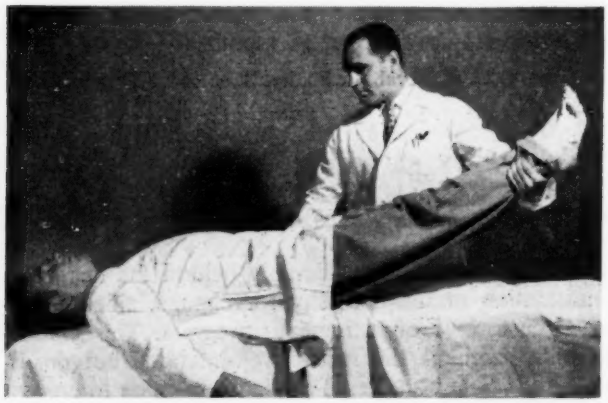
Dr. George L. Engel, Associate Professor of Psychiatry and Associate Professor of Medicine, the University of Rochester School of Medicine and Dentistry, aided in the preparation of this manuscript. Miss Wilma Clark supplied technical assistance.

regional anesthesia. Hingson and Southworth have shown by actual measure that the vascular bed of the lower extremities is expanded by an additional 600 to 800 cc. under regional block.[1] Anesthetists utilize this knowledge during spinal anesthesia, for "the most effective initial procedure to increase blood pressure is to raise the patient's legs to the vertical position." [2] Refutation of the concept of splanchnic pooling in man has been offered recently by Mueller and associates, who studied the circulatory changes in patients subjected to high and low spinal anesthesia. They found that, in spite of the production of moderate hypotension, neither vasoconstriction nor vasodilatation occurred in the splanchnic bed.[3] In sharp contrast to this static status of splanchnic vessels is our evidence that movement of the lower extremities during vasomotor block can both produce and prevent shock.[4] Syncope is most frequently a vasodepressor reaction, and it occurs secondarily to fright, anxiety, drug reaction, pain, anoxemia, and temperature sensitivity. Regardless of the precipitating cause, this type of syncope appears after a fall in blood pressure that is caused by widespread vasodilatation in muscle. Vasoconstriction occurs in the skin and gastrointestinal tract. Pooling of large amounts of slowly moving blood occurs in the periphery (in the legs if the patient is standing), and there is a critical reduction of cerebral or coronary blood flow. It has been observed that "in vasodepressor syncope there is a reflex vasodilatation which involves primarily muscle and which may in an average sized man lead to a shunting of over 1.5 liters of blood per minute to the muscles." [5] It should be stressed that in this paper we are concerned with only the types of syncope that are caused by falling blood pressure. We have used the classification of syncope introduced by Dr. Engel in his book "Fainting: Physiological and Psychological Considerations." [5] We do not consider syncope from cerebral, circulatory, or metabolic disturbances or syncope due to hyperventilation, hysteria, anemia, and cardiac disease. The protective blood vessel adjustments that prevent fainting after position shifts are temporarily lost if the person is confined to bed for long periods of time, and fainting may occur if such a patient stands up suddenly. Fainting during prolonged standing in one position, as the soldier must do on parade, occurs because of a similar pooling of blood in the legs, which in this instance is attributable to the fact that the blood return to the heart is not aided in the usual manner by the massaging action of muscular movement. The latter two examples of syncope properly belong under the heading of orthostatic hypotension, and their therapy will be included with the other members of that group. A vivid example of the importance of gravity in the production of vasodepressor syncope is offered by the study of the peripheral or depressor type of carotid sinus syndrome. In this type, which results in dilatation of peripheral vessels with a drop in blood pressure when the carotid sinus is stimulated, fainting does not and cannot occur if the patient is in the supine position.



Ideal position for the treatment of vasodepressor syncope provided the danger of aspiration of foreign bodies is not present.

What is the most advantageous position in the therapy of vasodepressor syncope? Theoretically it would be one in which (see figure) the patient is placed so that the head and trunk are tilted downward and the legs are raised, but practically the supine or prone position usually suffices. The classic head-between-the-knees position is actually of only minimal assistance and should be used only if the person who feels himself fainting cannot find space in which to lie down. The reason for this is apparent when we reflect on the significant quantity of blood trapped in the legs. This volume of fluid is returned to the circulation when the person lies down. Exception to the utilization of a supine position must, however, be made whenever there is a possibility of aspiration of foreign bodies. In this situation the prone head-down position is mandatory. Because prone positioning is not feasible in dental chairs, dentists may find it necessary to have the patient assume the head-between-the-knees position if syncope occurs when foreign objects are present in the patient's mouth. Sympathomimetic drugs and leg or abdominal bindings are not effective therapeutic measures for vasodepressor syncope, which is unpredictable in its appearance and is usually of short duration.

Much of what has been said for the part played by the lower extremities in the production of vasodepressor syncope can be repeated in a consideration of syncope secondary to orthostatic hypotension. Dr. George Engel told me recently of a patient with this disorder who reported that if he found himself in a position in which he had to remain standing he could often prevent syncope by lifting one leg and standing on the other. Measurements of blood pressure revealed that this maneuver elevated his blood pressure the few millimeters of mercury necessary to keep it above the critical level at which he lost consciousness. Not all of these faints, however, are necessarily due to pooling of abnormal amounts of blood in the lower extremities. In the uncommon syndrome of chronic orthostatic hypotension, for example, the amount

1. Conduction Anesthesia: Clinical Studies of George P. Litkin, Southworth, J. L., and Hingson, R. A., editors, Philadelphia, J. B. Lippincott Company, 1946.

2. Walton, J. H., and Netter, F. H., in Control of Pain with Saddle Block and Higher Spinal Anesthesia, Walton, J. H., editor, Summit, N. J., Ciba Pharmaceutical Products, Inc., 1948, p. 24.

3. Mueller, R. P., Lynn, R. B., and Sancetta, S. M.: Studies of Hemodynamic Changes in Humans Following Induction of Low and High Spinal Anesthesia: II. Changes in Splanchnic Blood Flow, Oxygen Extraction and Consumption and Splanchnic Vascular Resistance in Humans Not Undergoing Surgery, Circulation **6**: 894 (Dec.) 1952.

4. Soffer, A., and Sweet, R.: Effect of Position Changes of the Lower Extremities During Vasomotor Block, J. A. M. A. **151**: 1191 (April 4) 1953.

5 Engel, G. L.: Fainting: Physiological and Psychological Considerations, Springfield, Ill., Charles C Thomas, Publisher, 1950.

of blood pooled is often normal but compensatory vasoconstriction elsewhere may be inadequate.[6] A variation of this same physiological mechanism may explain the appearance of severe hypotension that may occur when a patient who is receiving autonomic drugs sits up.[7] Ephedrine and abdominal binders have been recommended for the prophylaxis of syncope caused by orthostatic hypotension. I feel that these are ineffectual remedies compared to leg bindings, particularly if the pressure is exerted all the way to the hips. An inflated leg cuff exerts a steady, readily regulated pressure. Such therapy is rational and has proved effective in instances of postural hypotension caused by the effect of drugs.[8] Need for comparable prophylaxis will probably soon increase enormously because of the availability of potent autonomic blocking drugs such as hexamethonium for the treatment of hypertension. On the other hand, it may be deduced from the above discussion that abdominal binders, though occasionally effective,[9] are often illogical and may have unpredictable results unless they are used concurrently with leg bindings.

SUMMARY

Vasodepressor syncope is the commonest type of syncope encountered by the physician. It is characterized by vasodilatation in muscle, and fainting occurs because, in the upright position, pooling of blood occurs primarily in the lower extremities. The most effective therapy, therefore, is not the head-between-knees position but rather the Trendelenburg or the supine or prone position with the legs raised. Recent evidence of the primary importance of the lower extremities in the production of syncope secondary to postural hypotension explains why leg binding (extending to the hips) may be more effective in prophylaxis than sympathomimetic drugs or abdominal binders. The need for such prophylaxis is increasing rapidly because of the use of sympathectomy and the availability of potent autonomic blocking drugs for the treatment of essential and malignant hypertension.

501 Main St. West (8).

6. Stead, E. A., Jr., and Ebert, R. V.: Postural Hypotension: A Disease of the Sympathetic Nervous System, Arch. Int. Med. **67**: 546 (March) 1941. Engel.[5]

7. Foley, W.: Some Therapeutic Applications of Vasodilating Agents, Conference on Therapy, Am. J. Med. **15**: 250 (Aug.) 1953.

8. Littman, A.; Gunnar, R. M.; Grossman, M. I., and Casas, R.: The Effect of Posture on Hypertension Induced by Sympathomimetic Amines in Man, Circulation **5**: 437 (March) 1952.

9. Moser, M., and others: Effect of Dibenzyline on Skin Temperature, Peripheral Blood Flow, and Vasomotor Responses in Normal Patients and Patients with Increased Vasoconstrictor Tone, Circulation **8**: 224 (Aug.) 1953.

Use of Gitalin.—Amorphous gitalin was used in the treatment of congestive heart failure of varying causes, degrees and duration in 68 patients. [It] was safely, comfortably and effectively useful in initial digitalization, redigitalization and maintenance digitalization of patients in heart failure. [It] . . . was of value in promptly and safely establishing digitalization and control of heart failure in eight patients in whom digitalis, digitoxin and Digoxin were ineffective due to toxicity. No toxicity was encountered in any patient studied in this series. The clinical application of the wide difference between toxic and therapeutic dose in gitalin is an important advance in the pharmacology of cardiac glycosides.—Sim P. Dimitroff, M.D.; George C. Griffith, M.D.; M. C. Thorner, M.D., and Joseph Walker, M.D., Clinical Evaluation of Gitalin in the Treatment of Congestive Heart Failure, *Annals of Internal Medicine*, December, 1953.

COUNCIL ON FOODS AND NUTRITION

ACCEPTED FOODS

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

H. J. Heinz Company, Pittsburgh.

Heinz Pre-Cooked Barley Cereal.

Ingredients: Barley flour, brewer's yeast, tricalcium phosphate, salt, iron (reduced powder), niacin, and thiamine.

Analysis (submitted by manufacturer).—Total solids 95.08%, moisture 4.92%, ash 5.53%, fat (by acid hydrolysis) 2.79%, protein (N × 6.25) 12.66%, crude fiber 0.96%, total sugar as sucrose 3.20%, natural reducing sugar none, salt 0.78%, and starch (by difference) 69.94%.

Vitamins and Minerals	Per 100 Gm.
Thiamine	4.8 mg.
Niacin	50 mg.
Riboflavin	243 mcg.
Calcium	1,220 mg.
Phosphorus	910 mg.
Iron	79 mg.
Copper	0.68 mg.

Calories.—3.68 per gram; 104 per ounce.

Use.—In the feeding of infants and young children.

Heinz Pre-Cooked Rice Cereal.

Ingredients: Rice, brewer's yeast, tricalcium phosphate, vegetable shortening, salt, iron (reduced powder), niacin, and thiamine.

Analysis (submitted by manufacturer).—Total solids 93.81%, moisture 6.19%, ash 4.41%, fat (by acid hydrolysis) 2.77%, protein (N × 6.25) 4.1%, crude fiber 0.47%, starch (by difference) 82.06%, total sugar as sucrose none, natural reducing sugar none, and salt 0.43%.

Vitamins and Minerals	Per 100 Gm.
Thiamine	3.6 mg.
Niacin	35.4 mg.
Riboflavin	119 mcg.
Calcium	1,280 mg.
Phosphorus	730 mg.
Iron	74 mg.
Copper	0.3 mg.

Calories.—3.69 per gram; 104 per ounce.

Use.—In the feeding of infants and young children.

Webster-Thomas Company, Boston.

Matchless Brand Dietetic Pack Kadota Figs.

Ingredients: Kadota figs processed and packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 12.6%, moisture 87.4%, ash 0.4%, fat (ether extract) 0.1%, protein (N × 6.25) 0.5%, crude fiber 0.8%, carbohydrates (by difference) 10.8%, and sodium 2.81 mg./100 gm.

Calories.—0.46 per gram; 13 per ounce.

Use.—In low calory, low sodium, and other therapeutic diets.

Matchless Brand Dietetic Pack Bartlett Pear Halves.

Ingredients: Pears processed and packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 8.9%, moisture 91.1%, ash 0.2%, fat (ether extract) 0.1%, protein (N × 6.25) 0.2%, crude fiber 0.6%, carbohydrates (by difference) 7.8%, ascorbic acid 1.5 mg./100 gm., and sodium 3.45 mg./100 gm.

Calories.—0.33 per gram; 9.4 per ounce.

Use.—In low calory, low sodium, and other therapeutic diets.

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CIGARETTE HUCKSTERISM AND THE A. M. A.

The unauthorized and medically unethical use of the prestige and reputation of the American Medical Association and THE JOURNAL in Kent cigarette advertisements currently appearing in the American press and other channels of mass communication constitutes an outrageous example of commercial exploitation of the American medical profession. The implication in these advertisements that the American Medical Association authorizes, supports, or approves any particular brand of cigarettes or combination of claims made in their behalf—whether pygmy-sized or king-sized, with or without filters, nicotinized or denicotinized—provides a most reprehensible instance of hucksterism. The manner in which the P. Lorillard Company has extolled its particular brand of cigarettes by reference in its advertisements to the American Medical Association and THE JOURNAL is to be strongly condemned.

On the basis of only one factor isolated from many, the P. Lorillard Company blatantly implies that the efficiency of their brand of filter tip solves the health problems associated with cigarette smoking. This approach to a vital problem is ill-conceived and lacks factual medical support. The inference that any type of filter has the approval of the American Medical Association is equally without foundation. Until the clinical relationship between the amount of nicotine and tars and their effect on the individual smoker is conclusively established, no filter can offer a panacea except one that possesses 100% efficiency. The hard facts of the matter are that a completely efficient filter would permit the smoker to inhale nothing but hot air!

Certainly there is no adequate evidence to prove conclusively that the reduction of nicotine and tars by means of a filter that is 60% inefficient has any physiological significance. The amount of nicotine and tars that reach the smoker's oral cavity is the one factor of fundamental importance. This cannot be determined merely by establishing the efficiency of a filter. The presentation of one fact and the exclusion of all other pertinent facts can result in a serious misrepresentation of the true status of health in relation to the smoking problem. Smokers who are misled are likely to obtain a false sense of security without real protection.

RELATION OF ABSENCE OF TONSILS TO BULBAR POLIOMYELITIS

Data have been provided over a period of years to suggest that mere absence of tonsils and adenoids, regardless of the time of their removal, leads to increased susceptibility to bulbar poliomyelitis. In a study of 432 patients with acute anterior poliomyelitis, Lucchesi and LaBoccetta [1] found that in 61% of patients whose tonsils were absent at the time the infection occurred the bulbospinal form of the disease developed while in 76% the bulbar type developed. A much higher incidence of bulbar involvement took place in these persons than in patients who still had tonsils and adenoids, the difference being apparent in all age groups. Seventy-eight per cent of the patients who died of poliomyelitis had neither tonsils nor adenoids when they became ill.

In 1952, Top [2] investigated 1,947 patients who had been admitted to the Herman Kiefer Hospital in Detroit over a 10 year period because of poliomyelitis. In this group, 51.9% of the patients had neither tonsils nor adenoids at the time the disease was contracted; 85.1% of the patients afflicted by bulbar poliomyelitis had previously been subjected to the tonsillectomy procedure, while 68.7% of the patients attacked by bulbospinal poliomyelitis had previously undergone tonsillectomy. Of the patients with nonparalytic forms 45.6%, and of the patients with spinal paralytic forms 43.1% had neither tonsils nor adenoids. Of the patients afflicted by bulbar poliomyelitis who had previously been subjected to tonsillectomy 93.5% died, as compared to 56.9% of patients with bulbospinal poliomyelitis who died.

Weinstein, Vogel, and Weinstein [3] recently repeated the investigations of Lucchesi, LaBoccetta, and Top to determine whether the relation of absence of tonsils and adenoids to increased susceptibility to bulbar poliomyelitis applied to their own patients. Records at Haynes Memorial Hospital, Boston, of 800 patients with poliomyelitis, 500 of whom had been subjected to tonsillectomy and adenoidectomy at some time and 300 of whom had not been operated on, were studied. All patients had a clinical history pointing to poliomyelitis; physical findings to indicate infection of the central nervous system; and sterile spinal fluid that contained more than 10 white blood cells per cubic millimeter, an increased quantity of protein, and a normal sugar content.

Analysis of the data suggested that the absence of tonsils and adenoids, regardless of the time of their removal in relation to the onset of poliomyelitis, increased the risk that the bulbar form of the disease would develop. Of 85 patients in whom bulbar poliomyelitis developed, 85.9% had previously been subjected to tonsillectomy; of those in whom tonsils were still present, bulbar poliomyelitis developed in only 14.1%. A similar relationship was observed in the case of patients attacked by bulbospinal poliomyelitis, the disease occurring about five times more frequently in patients subjected to ton-

1. Lucchesi, P. F., and LaBoccetta, A. C.: Relationship of Tonsils and Adenoids to the Type of Poliomyelitis, Am. J. Dis. Child. **68**: 1 (July) 1944.

2. Top, F. H.: Occurrence of Poliomyelitis in Relation to Tonsillectomies at Various Intervals, J. A. M. A. **150**: 534 (Oct. 11) 1952.

3. Weinstein, L.; Vogel, M. L., and Weinstein, N.: A Study of the Relationship of the Absence of Tonsils to the Incidence of Bulbar Poliomyelitis, J. Pediat. **44**: 14 (Jan.) 1954.

sillectomy than in patients with tonsils still intact. The incidence of both nonparalytic disease and spinal paralytic disease was higher in patients without tonsils than in those with tonsils. In general, comparison of patients with tonsils and patients without tonsils showed that bulbar poliomyelitis was three to four times commoner in patients subjected to tonsillectomy than in those not operated on and that bulbospinal poliomyelitis was three to five times commoner in patients subjected to tonsillectomy than in those in whom surgery had not been performed.

Finally, the data presented by the authors appear to suggest that the time when tonsillectomy is performed when related to the onset of poliomyelitis may be of less significance than the mere fact that tonsils are absent. Settlement of this aspect of the tonsil-poliomyelitis problem is of considerable importance to the entire medical world and merits further study in view of the growing belief that recent tonsillectomy may lead to increased susceptibility to the bulbar and bulbospinal forms of poliomyelitis.

The relation between tonsillectomy and poliomyelitis and between the presence or absence of tonsils and poliomyelitis has been the subject of discussion for some years, and from time to time equally forceful but in some respects conflicting views have had ardent supporters. Even in THE JOURNAL different views on the subject have appeared within weeks of each other. For example, one author [4] concluded that tonsillectomy increases significantly the incidence of bulbar poliomyelitis when performed during epidemics, and another author [5] claimed his three year study of surgery on the nose and throat failed to reveal any significant increase in the incidence of poliomyelitis at any time; however, he warned that tonsillectomies and adenoidectomies performed less than 30 days before the onset of the disease seemed to increase the likelihood of the occurrence of the bulbar type of the disease.

A careful analysis of these and other published reports [6] will show, however, certain basic agreements, even though there may not be a meeting of the minds on other points. One of the beliefs about which there is less disagreement concerns the time interval between tonsillectomy or adenoidectomy and onset of the disease: Most seem to agree that if poliomyelitis strikes within a matter of days after such an operation there is a greater risk that the patient will have the bulbar type and severer illness. Most also seem to have sufficient apprehension to recommend these operations only on a selective basis during epidemics of poliomyelitis.

It is obvious that more study is needed on this important problem. Some facts are now apparent, others still in question. While a determination of the true relationship between some operations (or the effect of the loss of tissue by these operations) remains for further exploration before all of the questions are answered, one ancillary observation emerges: Once again is there ample demonstration of the need for asking "Is this operation really necessary?" before the tonsils or adenoids are removed.

PHYSICIANS ARE WELL DISTRIBUTED

Elsewhere in this issue (page 1209) is a brief preview of a forthcoming report [1] on the distribution of physicians by medical service areas by the Bureau of Medical Economic Research of the American Medical Association. This report effectively sets at rest so many rumors regarding the distribution of physicians in the United States and throws so much light on the so-called national shortage of physicians that it may have an impact in its field comparable to that of the Flexner investigation of medical education of 1910. The report, which will be published this spring, presents in very great detail the results of a seven-year search by the Bureau of Medical Economic Research, aided by the staffs of the state medical societies, into every county and town of the United States for the purpose of determining the distribution of physicians in relation to the persons whom they serve. It was necessary to lay out special trading areas for medical services because none of the many sets of trading areas that have been established by market research men reflected the medical trading habits of the American people. In particular, the trading areas established for commodities and other services were, for the most part, too large to circumscribe the physicians and the persons they serve.

The relative variation in population-physician ratios was found to be much greater for ratios based on counties than for ratios based on the 757 medical service areas, which, alone among trading area studies, ignore all county and many state boundary lines. Only 361 additional physicians would have been required in April, 1950, in the 75 areas that had from 2,020 to 5,100 persons per active physician to have brought the maximum ratio down to 2,000. This figure, 361, is a strange contrast with the series of predictions emanating from federal agencies during the past half-dozen years placing the so-called national doctor shortage at 22,000 to 49,000. For those who think the distribution would be bad if there were more than 1,500 persons per active physician in a meaningful area, the report points out that only 2,530 additional physicians in active private practice would have been required in the extreme ratio areas to reduce all ratios in excess of 1,500 down to 1,500. This forthcoming report should mark the beginning of the end of an era of irresponsible and fantastic propaganda regarding the need for sweeping measures to greatly expand the number of physicians. The maintenance of high quality in the training of our future physicians is, of course, another and a different question.

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4. Galloway, T. C.: Relationship of Tonsillectomy to Poliomyelitis, J. A. M. A. **151**: 1180 (April 4) 1953.

5. Miller, A. H.: Relationship of Surgery of the Nose and Throat to Poliomyelitis, J. A. M. A. **150**: 532 (Oct. 11) 1952.

6. Wilson, J. L.: Relationship of Tonsillectomy to Incidence of Poliomyelitis, J. A. M. A. **150**: 539 (Oct. 11) 1952.

1. Dickinson, F. G., and Bradley, C. E.: Distribution of Physicians by Medical Service Areas, Bulletin 94, 1954. Requests for copies of this bulletin may be filed in advance of publication with the Bureau of Medical Economic Research, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill. Bulletin 94A, the 64-page map supplement to Bulletin 94, was published last summer.

TRAUMA AND DIABETES

The thesis that sudden trauma can cause diabetes has steadily lost support with the expanding knowledge of the nature of diabetes; however, evidence has accumulated to show that trauma indirectly can activate, or accelerate, the appearance of latent diabetes in the hereditarily predisposed, particularly if accompanied by infection, reduced muscular exercise, overweight, overeating, disease of the pituitary, thyroid, adrenal, or liver, and pregnancy.

To prove that trauma is the cause of diabetes in any individual case the evidence must show that: (*a*) the disease did not exist before the trauma; (*b*) the trauma was severe, injuring the pancreas; (*c*) the symptoms and signs of the disease developed within a reasonable period after the trauma, the etiological importance of the trauma waning with the prolongation of the interval; and (*d*) the symptoms and signs of diabetes were not transitory but permanent and if permanent that the evidence was such that as a result of the trauma contributory factors came into play to make latent diabetes manifest. Trauma as the cause of diabetes should be distinguished from the discovery of diabetes after an accident. Eager as a jury or judge might be to side with the injured party or honest as they may be in their conviction that the plain facts outweigh medical opinions, a careful analysis of the data is essential lest a false precedent be created that would involve the onset of the disease in millions of diabetics.

Physical injury to the pancreas is recognized as a cause of diabetes, although there are only very few fairly well authenticated cases in the literature. As for injury to the brain it recurrently comes up for discussion because of a single experiment of Strieck [1] in a dog with diabetes following trauma to the hypothalamic region, as yet unconfirmed in more than one other laboratory, and the work of Ranson [2] on the hypothalamus, which showed diabetes in 1 of 50 monkeys but in none of 300 cats. Diabetes never followed operation on the brain by Cushing, and only transitorily by other surgeons in routine operations on the brain. It was never noted by Munro in his vast experience with injuries to the skull.

As for simple physical injury, in the experience of the Harvard Athletic Association and also of a referee of boxing matches, no such instance was ever encountered. In neither world war did physical trauma appear in France, Germany, or the United States to have caused diabetes in the combatants. Automobile accidents occur by the thousands, but one does not hear of resulting diabetes. The evidence pointing to a psychological factor in physical injury is still more remote. There is no increase of diabetes in the populations of those countries at war; there is no thought of postponing a decision for operation by a surgeon or dentist in order to allay apprehension on the ground it might be followed by diabetes; and there is no evidence in Reno or elsewhere that the tension of divorce proceedings might lead to diabetes and no suggestion in court proceedings that condemnation to death of a criminal will lead to the appearance of diabetes in a relative or even in the criminal himself, condemned to death, in the interval between sentence and its execution. Physical and psychological trauma, therefore, cannot be advanced as a cause of diabetes in these instances.

Diabetes is a common disease, and in the United States it is found in one person in 40 or 50.[3] Its onset occurs most commonly between 40 and 60 years of age. Diabetes is much commoner in the obese. It develops so insidiously in adults that in 86% of the cases the onset cannot be determined to have taken place within two months of its recognition.

Rules for decisions as to the connection between an accident or service at the front in the army as causes of diabetes have been more definite abroad than in the U. S. and particularly in Germany, because of social insurance. In October, 1928, according to Grafe, the rules laid down by the German Government Insurance Bureau for a connection between accident or injury acquired in war were: 1. Before the accident no signs of diabetes should exist. 2. At the greatest, the interval between accident and the first signs of diabetes should not exceed half a year. 3. The accident should have been very severe and must have involved the region of the pancreas. A legal decision was then easy, and there were practically no cases recognized, but today Grafe asserts that a legal judgment on accidents and war injuries as a cause of diabetes has become most difficult but important. In September, 1952, before the German Society for Digestive and Metabolic Disease a symposium was held on legal questions related to accidents in which some 18 clinicians took part, but definite rules were not expressed or conclusions reached. The question arose as to whether the legal attitude had kept pace with the modern developments in our knowledge of diabetes. Apparently in December, 1950, new regulations were promulgated in Germany. These emphasized that in constitutional disease it is only seldom that one cause is responsible. The personality of the patient, his constitution, and his liability to disease all play a more or less important role. The point is raised that a predisposing circumstance, as well as the accident itself, must be evaluated for acceptance or rejection. The so-called instigating factor can be relatively trifling in comparison to the severity of the ensuing effect. Therefore, in each instance the question to be decided is how important is this contributory although not inciting factor. To the contributory factors Grafe would add to those above mentioned a physical injury of exceptionally severe degree, but against such an explanation are the thousands of incidents occurring daily of physical injuries not followed by diabetes. It is universally recognized that an accident may temporarily activate diabetes, but, when the results of the trauma are relieved, the diabetes reverts to its previous status.[4] A comprehensive discussion of trauma and diabetes will be found in the book by Joslin and others [5] and in Grafe's recent review of the subject.[6]

1. Strieck, F.: Experimenteller Beitrag zur Frage des cerebralen Diabetes, Ztschr. f. d. ges. exper. Med. **104**: 232-242, 1938.

2. Ranson, S. W.; Fisher, C., and Ingram, W. R.: Adiposity and Diabetes Mellitus in Monkey with Hypothalamic Lesions, Endocrinology **23**: 175-181 (Aug.) 1938.

3. Wilkerson, H. L. C., and Krall, L. P.: Diabetes in New England Town: Report of 4 Year Progress Study of Oxford, Mass., Diabetes Survey of 1946-1947, J. A. M. A. **152**: 1322-1329 (Aug. 1) 1953.

4. Thomsen, V.: Studies of Trauma and Carbohydrate Metabolism with Special Reference to Existence of Traumatic Diabetes, Acta med. Scandinav., supp. 91, pp. 1-416, 1938 (see also Trauma and Diabetes, editorial, J. A. M. A. **112**: 1592-1594 [April 22] 1939).

5. Joslin, E. P.; Root, H. F.; White, P., and Marble, A.: Treatment of Diabetes Mellitus, ed. 9, Philadelphia, Lea & Febiger, 1952.

6. Grafe, E.: Zur Beurteilung des Zusammenhangs von Stoffwechselkrankheiten mit Unfall- und Kriegsbeschädigungen, München. med. Wchnschr. **95**: 448-454 (April 10) 1953.

ORGANIZATION SECTION

MEDICAL SOCIETY OF THE STATE OF NEW YORK

The first medical society in the state, a "Weekly Society of Gentlemen in New York," and, according to Dr. Walter Burrage, the second in the colonies, was founded about 1749. That the group was active is attested by Dr. Peter Middleton, who, in November, 1769, at the opening of the medical school in Kings' College, referred to a medical society "now subsisting in this place," and said, "may it long subsist." Dr. John B. Beck also testifies to the importance of this early medical group in an address before the Medical Society of the State of New York, Feb. 1, 1842. While he pointed out that New York was not the first to attempt legal regulation of medical practice, he said: "The State of New York, I believe, is entitled to the honor of adopting the first effectual measures for regulating the practice of medicine. This was not, however, until . . . 1760, when the General Assembly of the Province ordained that 'no person whatsoever should practice as a physician or surgeon, in the city of New York, before he shall have been examined in physic or surgery, and approved of and admitted by one of his majesty's council, the judges of the supreme court, the king's attorney general, and the mayor of the city of New York, for the time being, or by any three or more of them, taking to their assistance for such examinations such proper person or persons as they in their discretion shall think fit. If the person so examined was approved, a certificate was given, allowing him to practice physic or surgery, or both throughout the province. In the case of noncompliance, the penalty was a fine of five pounds.'"

Almost half a century after the founding of the Weekly Society of Gentlemen, a Medical Society of the State of New York (a local New York City group, not to be confused with the later society of the same name) was founded, Nov. 14, 1794, by "a Number of medical gentlemen, wishing to associate for the purpose of providing friendly professional intercourse." This too was an active group, which on Feb. 14, 1797, held an extra meeting to discuss "a law now being before the Legislature on the subject of the practice of physic." On March 23 the legislature passed "an Act to Regulate the Practice of Physic and Surgery in This State," pursuant to which "at a respectable Meeting of Physicians of the County of Westchester on the 8th day of May, 1797 at the House of William Barber in the White Plains," eight physicians founded the first county medical society in New York.

The present Medical Society of the State of New York was incorporated April 4, 1806, and held its first duly organized meeting in February, 1807. In 1845, after abortive attempts by the society to call into national convention all the state medical societies and the medical schools in the United States, Dr. Nathan Smith Davis introduced the following resolution: "WHEREAS, It is believed that a national convention would be conducive to the elevation of the standard of medical education in the United States; and WHEREAS, There is no mode of accomplishing so desirable an object without concert of action on the part of the medical colleges, societies and institutions of all the states; therefore be it *Resolved,* That the New York State Medical Society earnestly recommends a national convention of delegates from medical societies and colleges in the whole Union to convene in the city of New York on the first Tuesday in May in the year 1846 for the purpose of adopting some concerted action on the subject set forth in the foregoing preamble. . . ." From this initial impetus evolved the organizational meeting in the medical department of New York University, May 5, 1846, which led to the calling of the National Medical Convention in Philadelphia, May 5, 1847, and the establishment of the American Medical Association. Early in the 1880's, however, after adoption by the state society of a new code of ethics that was unpopular with many members, the American Medical Association refused to seat its delegates and in 1884 seated delegates of New York State Medical Association instead. The latter group, in 1906, combined with the former, retaining the name of the Medical Society of the State of New York.

This society, which now has more than 23,000 members in 61 county medical societies and 9 district branches, has its headquarters in the 386 Fourth Avenue building in New York City. It maintains two smaller offices, one in Forest Hills, conducted by Dr. Theodore J. Curphey, chairman of the public health and education committee, and one in Albany, occupied by Dr. Harold B. Smith, executive officer, who functions for the legislation committee of which Dr. James Greenough is chairman. The library of the association, located at the Medical Society of the County of Kings, 1313 Bedford Ave., Brooklyn, houses 175,000 volumes and receives from 1,500 to 1,600 current periodicals.

The organization, which has annual expenditures of about $673,000, employs 65 persons. It publishes the semimonthly *New York State Journal of Medicine,* a monthly news letter, and a biennial medical directory. In 1921 the society originated the Group Plan of Malpractice Insurance and Defense, through which the participant is entitled to legal defense in malpractice suits and the privilege of securing group malpractice insurance. The state society maintains a workmen's compensation bureau that has figured importantly in matters involving legislation and arbitration, an important field, in that more than 700,000 industrial injuries occur annually in the state.

Three Hundred Eighty-Six Fourth Ave., New York, where the headquarters of the Medical Society of the State of New York occupy the 19th and part of the 6th floor.

The society has frequently been instrumental in initiating legislation for the maintenance and improvement of public health. One of its recent projects is the development of the Blood Banks Association of New York State, Inc., located in the society's headquarters, which proposes to federate in one group all nonprofit blood banks in the state through a clearing house, to facilitate exchange of blood for transfusion and other purposes, to stimulate research, and probably to develop a blood insurance program.

Since 1915 the council committee on public health and education has arranged postgraduate instruction, building to the present program, which makes available 1,000 lectures. The state society pays traveling expenses of the lecturers, and honorariums are provided by the New York State Department of Health.

Junior membership, which entails voice but no vote and for which dues are half those of active members, is available to licensed physicians of the state who have been medical school graduates for not more than five calendar years; active membership must be assumed on entering private practice. A member who has reached age 70 or who is permanently disabled may become a retired member of the state society, after nomination by his county society and, if he is in need of funds, may

appeal to the Physicians' Home. Established in 1918, this project is not an institution but a flexible instrument for the maintenance of the aged and infirm physician and his wife or widow, whenever possible in their own home and community, but otherwise in a nursing home or sanitarium of the beneficiary's choosing. Assistance may take the form of payment of rent, institutional care, transportation to the family home in a distant state, or maintenance of the family in its own quarters. The home, maintained through annual voluntary assessment of $1, through membership dues, and through bequests, has substantial investments, and its annual receipts have shown a surplus over disbursements.

Through its War Memorial, a fund of almost $250,000 created in 1948, the society contributes toward seven years of education for each child of members who died during World War II. Over 20,000 physicians contributed $12 each to assure a $600 annual payment to each student. Less directly, the society helps to maintain the Veterans Medical Service Plan of New York, which it helped to incorporate in 1946. A nonprofit corporation, the plan supervises services to veterans rendered by physicians and has negotiated for them fee schedules with the Veterans Administration. Its officers and directors are members of the state medical society.

The Medical Society of the State of New York holds its annual meeting the second week in May, alternately in Buffalo and in New York City, where this year the sessions will be held May 10-14. Officers of the society include Dr. Andrew A. Eggston, Mt. Vernon, president; Dr. Dan Mellen, Rome, president-elect; Dr. Earl C. Waterbury, Newburgh, vice-president; Dr. Walter P. Anderton, New York, secretary; and Dr. Maurice J. Dattelbaum, Brooklyn, treasurer.

THE FIFTIETH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Several of the papers presented at the congress appear beginning on page 1200 of this issue.—ED.

Among the major topics of discussion at the 50th Annual Congress on Medical Education and Licensure held Feb. 7-9 in Chicago were postgraduate medical education, the training of foreign doctors now practicing in the United States, the need for better professional orientation of medical students, the distribution of physicians, military medical personnel needs, and the progress of private fund raising for medical schools. More than 600 representatives of medical schools, licensing and specialty boards, and medical organizations attended the three day meeting sponsored by the Council on Medical Education and Hospitals of the American Medical Association in cooperation with the Federation of State Medical Boards of the United States and the Advisory Board for Medical Specialties.

One afternoon was devoted to panel discussions on the objectives, methods, and requirements of postgraduate education programs. Three panel groups based their discussion on a preliminary report by Dr. Douglas D. Vollan, staff member of the Council on Medical Education and Hospitals, who gave a preview of the Council's survey of postgraduate medical education. Dr. Vollan reported a fast-growing interest in postgraduate education and estimated that more than one-third of the country's practicing physicians each year take advantage of the opportunities offered by postgraduate courses. Responses from about 5,000 physicians out of 17,000 chosen at random, he said, indicated that each year they spent an average of 83.3 eight-hour days in keeping themselves up-to-date on medical matters.

The survey showed that they are doing so by means of medical reading, professional contacts with colleagues in consultations or other ways, hospital staff meetings, medical society meetings, and postgraduate courses. Dr. Vollan also reported increasing experimentation with television, recorded programs, and film strips as new methods of bringing postgraduate education to physicians who are unable to get away from their practices.

Throughout the panel discussions that followed the survey report, it was repeatedly stressed that medical education should be regarded as a continuing process that lasts throughout a physician's professional career, rather than as something that is completed when a doctor receives his M.D. degree and his license to practice. Special emphasis was placed on the problems of how to reach physicians in small towns remote from medical centers and how to stimulate those who have no desire to go away for postgraduate courses. One panel member insisted that medical societies have a definite responsibility to sponsor and advance postgraduate education in order to improve the caliber of medical service to the public. Another urged that teachers of postgraduate courses should have adequate previous experience to appreciate the practical needs of active practitioners. A third participant suggested there is a rich area for experimentation in the field of home study courses. There was general agreement on the need and value of participative courses that enable postgraduate students to work closely with teachers and patients in the demonstration of clinical problems.

The licensure and medical care problems created by the heavy influx of foreign-trained physicians were touched on by three different speakers—Dr. Willard C. Rappleye, dean, Columbia University College of Physicians and Surgeons; Dr. Stiles D. Ezell, secretary, New York State Board of Medical Examiners, and Dr. Edward L. Turner, Secretary, A. M. A. Council on Medical Education and Hospitals. "Even before the elimination of the last of the unapproved medical schools in this country," Dr. Ezell reported, "there had begun a migration of physicians to this country which has now reached a total of more than 20,000. The challenge in this fact is that the profession has not been prepared to understand what is involved in such a massive movement, nor has it realized the numerous deficiencies involved in the collective educational background of this group." Dr. Ezell said that foreign medical education must be approached "with the conviction that there are wide variations in it throughout the world, that it is most often geared to minimal national needs, that it practically never arises above the corresponding economic and general educational level, and that it has a widespread lack of uniformity in what constitutes a satisfactory background in both premedical and professional fields."

Dr. Edward J. McCormick of Toledo, Ohio, President of the American Medical Association, told the congress that good public relations for the medical profession must start in the colleges and medical schools. Dr. McCormick also discussed professional orientation with a luncheon panel that included Dean J. Murray Kinsman of the University of Louisville School of Medicine, Dean Vernon W. Lippard of Yale University School of Medicine, and Mr. Rollen W. Waterson of Oakland, Calif., executive secretary of the Alameda-Contra Costa Medical Association. Discussion moderator was Mr. Leo E. Brown, A. M. A. Director of Public Relations. The panel members agreed that most medical school graduates enter active practice with inadequate preparation and training in ethics, medical economics, doctor-patient relationships, and social problems. Medical schools have the primary responsibility of providing such teaching, but medical societies and practicing physicians share some of the responsibility and should give active help to the schools, the group felt. Progress is being made, it was agreed, and the medical schools can learn a lot from one another by stimulating a greater exchange of ideas.

The distribution of physicians in the United States was described as very good by Frank G. Dickinson, Ph.D., Director of the A. M. A. Bureau of Medical Economic Research, who gave a preliminary report of a seven year survey based on division of the country into 757 trading areas. The survey showed that in the census year of 1950 only one-sixth of one per cent of the nation's population lived in areas outside a 25-mile radius of the closest town with an active practicing physician.

Dr. Frank B. Berry of Washington, Assistant Secretary of Defense (Health and Medical), reported that the armed services need a much larger "hard core" of regular medical officers and that they hope to persuade more young physicians to make a career of military medical service. He also outlined three different plans that are under consideration in Washington to bring about a more orderly induction of young doctors into the armed forces.

Progress in private financing of medical schools was reported by Mr. William C. Stolk, President of the American Can Company and a trustee of the National Fund for Medical Education, and Dr. Louis H. Bauer, President of the American Medical Education Foundation. Dr. H. G. Weiskotten, Chairman of the Council on Medical Education and Hospitals, reviewed the past

50 years of council activity, pointed to the new era of experimentation in medical education that now is under way, and pledged continued effort to provide medical care second to none. Aura E. Severinghaus, Ph.D., associate dean of Columbia University College of Physicians and Surgeons, presented highlights from the survey on preprofessional education.

Reporting on the First World Conference on Medical Education, held last August in London under the auspices of the World Medical Association, Dr. Walter L. Bierring said, "the leading medical educators of the world are concerned, in a united effort, to maintain the highest standards of medical education, yet equally conscious of the need of definite changes in the training methods of the modern physician in order to meet the demands of a changing social order." Dr. Bierring, secretary of the Federation of State Medical Boards of the United States, added, "there was a conscious feeling of pride to note the eminent leadership of American medical education throughout this conference."

A federation committee headed by Dr. Bruce Underwood, secretary, Kentucky State Board of Health, recommended that a uniform medical practice act be developed as a guide for the states and that it be submitted for consideration at the 1955 meeting. Mr. George E. Hall of the A. M. A. Bureau of Legal Medicine and Legislation, who made a survey for the committee, reported wide variations in state medical practice acts and urged that efforts be made to obtain greater uniformity in the laws. At the closing session of the Federation of State Medical Boards, Dr. Elmer W. Schnoor of Grand Rapids, Mich., was installed as president, to succeed Dr. John N. McCann of Youngstown, Ohio. Dr. M. H. Crabb of Fort Worth, Texas, was named president-elect.

BOARD OF TRUSTEES

This is one of a series of brief statements explaining the work of various departments of the American Medical Association. —ED.

The Board of Trustees acts for the House of Delegates of the American Medical Association in the interim between meetings of the House. Stated meetings of the Board are held every three months and more often if the chairman of the Board thinks necessary. During the past few years it has met in several extra sessions. The Board is organized with a chairman, vice-chairman, secretary, and an executive and finance committee. The executive committee meets every six weeks, or more often if necessary, and, acting as a finance committee, handles the financial affairs of the Association. Between meetings of the Board, it reviews the material to be discussed by the Board and makes recommendations concerning possible final Board action. Especially important items are passed over with the recommendation that they be considered by the Board as a whole.

The Board of Trustees has charge of the property and financial affairs of the Association and has certain duties that it must perform under the corporate law of the state of Illinois. There are 11 trustees, usually distributed geographically so that they come from various sections of the United States. Nine trustees are elected by the House of Delegates, but the president and President-Elect also are voting members of the Board. Each Trustee is elected for a five year term, but he cannot serve more than two consecutive terms of five years each. If a Trustee is elected to fill an unexpired term this is not regarded as a full term unless the unexpired term consists of three or more years.

The Board of Trustees of the American Medical Association has a much more difficult task than the board of trustees of a corporation engaged in business because it directs the policy and has a more direct hand in running the affairs of the Association than the average corporate board of a commercial concern. Unless the Board is in strict executive session, the other officers, i. e., the Treasurer, the Speaker of the House of Delegates, the Vice-Speaker of the House of Delegates, the Secretary and General Manager, the Assistant Secretary, and the Editor of THE JOURNAL attend all meetings of the Board of Trustees but have no vote. At meetings of the executive committee, the President, President-Elect, Chairman of the Board, Treasurer, Secretary and General Manager, Assistant Secretary, and Editor sit in without vote.

Matters of importance are discussed by telephone conference at intervals between Board meetings. When anything arises requiring official but not policy-making action a vote is taken by mail. The mail vote must be unanimous. Certain members of the Board are elected to act as liaison to some of its councils and to attend their meetings. Members of the Board are appointed to testify before congressional committees and hold membership on many active committees of the Association, such as the Committee on Legislation. Trustees of the Association devote an enormous amount of time and energy to the job of guiding the affairs of the Association, and although they come from various sections of the country they are not truly sectional representatives but must have the breadth of vision to represent organized medicine as a whole.

MEETING OF STATE CHAIRMEN OF AMEF

The third annual meeting of state chairmen of the American Medical Education Foundation (AMEF) was held in Chicago in January. In his opening address, Dr. Louis H. Bauer, president of the foundation, said the foundation had raised $1,089,962 from 18,126 contributors last year and pointed out that, of this figure, $500,000 was donated by the American Medical Association. Unrestricted contributions made by physicians directly to their medical schools during 1953 amounted to $1,231,000. Universities are not receiving sufficient funds from endowments, and if additional monies are not forthcoming from physicians through the AMEF and from business and industry through the National Fund for Medical Education, our medical schools will have to lower their teaching standards. The foundation's goal for 1954 is 2 million dollars. Dr. Bauer recommended that the campaign continue with an approach to the profession from the state and county level. He further advised the chairmen that they should carry the foundation's message to individual physicians since their support is necessary to obtain aid from business and industry. Support should be on a voluntary basis, for if the government gives support to the medical schools, gifts from private voluntary sources now donated directly to the schools will cease.

Dr. Edward L. Turner, secretary-treasurer of the foundation and Secretary of the Council on Medical Education and Hospitals of the American Medical Association, said that the cost of medical education from a student's standpoint is about three times what it was 35 years ago. Although federal scholarships and the financial aid rendered by student loan funds of some of the universities has been helpful, our medical schools are operating under tremendous financial hardship. Business and industry have a great deal at stake in the medical care that is given to the American public.

Mr. E. J. Ade, fund-raising director of the National Fund for Medical Education, said that since 1951 the National Fund has distributed almost 5 million dollars to the 79 approved medical schools and that about 50% of this figure was obtained from the AMEF through contributions by the American Medical Association and physicians. The most important factor in the fund's ability to attract business leaders is that it is able to answer the question "What are the doctors doing?" He mentioned that few businessmen could be persuaded to help those who would not help themselves. Corporations gave $600,000 to the National Fund in 1951, $700,000 in 1952, and $1,360,000 in 1953. Many corporations contribute to education through special projects whereby they educate a student who will work for the organization after he has completed his training. This type of giving is basically selfish, and it is the present policy of the leaders of the National Fund to make businessmen realize that medical education is a national problem that requires additional support. The National Fund now has 50 committees, with industrialists in each field assigned the job of telling the fund's story to their colleagues. The fund also distributes a monthly bulletin entitled "Medical Advance," to which much information could be supplied by state chairmen and the medical schools.

Mrs. Frank Gastineau, national AMEF committee chairman of the Woman's Auxiliary to the American Medical Association, reported that during 1953 auxiliaries and their individual members had contributed $34,704 to the AMEF, adding that many of these donations were obtained by sponsoring parties and benefits, with the proceeds directed to the foundation. Members of her committee are making direct letter appeals to auxiliaries and have prepared a new Auxiliary pamphlet for the AMEF committee to distribute to all Auxiliary members. Mr. Hiram W. Jones, executive secretary of the AMEF, pointed out that business and industry know little about the validity of the medical schools' claims that they need additional funds. The physician is the best-informed source and others look to him for verification of these claims. Illinois led the nation in contributions to the foundation in 1953. Physicians, individuals, and organizations in Illinois gave $190,461, and of this figure, $22,831 was from sources other than the dues-increase of the Illinois State Medical Society. Utah has adopted the Illinois plan. The foundation's exhibit is available for state medical society meetings.

1954 ANNUAL MEETING IN SAN FRANCISCO

More than 12,000 physicians are expected to attend the 103rd Annual Meeting of the American Medical Association in San Francisco, June 21-25. Plans for this, the world's largest medical convocation, call for general scientific meetings all day on Monday and on Tuesday morning, with the scientific sections meeting on Tuesday afternoon, all day Wednesday and Thursday, and on Friday morning. All meetings will be held in buildings in the Civic Center area, with the exception of the section on ophthalmology and a special Wednesday evening program, which will be in the Terrace room of the Fairmont hotel.

Once again color telecasts of clinics and operations will be shown. They will originate from the San Francisco General Hospital and will be received on two four-by-six-foot screens in the Masonic Temple. Medical motion pictures will be shown throughout the meeting at the Masonic Temple. The world première showing of some outstanding films of general interest will take place Wednesday evening in the Fairmont hotel. Among some 200 scientific exhibits at the Civic Auditorium will be special features on fractures, blood banks, fresh pathology, preceptorships, pulmonary function testing, and question and answer conferences on cardiovascular diseases. In the Technical Exposition, also in the auditorium, about 400 firms will show physicians the latest developments in new drugs, books, instruments, and other adjuncts to the practice of medicine.

A. M. A. CLINICAL MEETINGS

The A. M. A. Board of Trustees recently selected Seattle as the site for the 1956 Clinical Meeting of the Association. This will mark the first time that such a meeting will be held in the northwest. The Board also decided that the Clinical Meeting scheduled for Miami, Fla., this year will begin on Monday, Nov. 29, and end on Thursday, Dec. 2. Clinical meetings usually begin on Tuesday. The change was made in order to give those attending the meeting a longer week end, either before or after the meeting. The Thursday before the meeting opens is Thanksgiving Day.

FEDERAL MEDICAL LEGISLATION

Draft of Doctors in Enlisted Grades

Senator Saltonstall (R., Mass.), chairman of the Senate Armed Services Committee, in S. 3096 has introduced an administration bill that would remove the mandatory requirement that physicians and dentists be given commissions. Any physician, dentist, or person in an allied specialist category "who fails to qualify for, or to accept, a commission or whose commission is terminated" may "be utilized in his professional capacity in an enlisted grade or rank." This bill was referred to the Senate Armed Services Committee, which scheduled a hearing for March 18.

Amendment to Hospital Survey and Construction Act

Congressman Elliott (D., Ala.) in H. R. 8229 has introduced an amendment to the Hill-Burton hospital construction act. This measure is identical with H. R. 7341, which was superseded by H. R. 8149. Both measures have been previously reported. The latter one has been passed by the House of Representatives, and hearings have been held before the Senate Committee on Labor and Public Welfare. H. R. 8229 was referred to the House Interstate and Foreign Commerce Committee.

STATE MEDICAL LEGISLATION

California

Bills Introduced.—A. 54-X and A. 57-X, to amend the law relating to penalties for the **sale of narcotics to a minor** propose to authorize life imprisonment for a first offense and the death penalty for a subsequent offense. A. 55-X and A. 56-X, to amend the **law relating to narcotics** propose, among other things, to authorize the penalty to 10 years' imprisonment for a second offense and a penalty up to 20 years' imprisonment for subsequent offenses and proposes further that persons convicted under the narcotic act would not be granted probation by the trial court and would not be entitled to a suspended sentence.

Kentucky

Bill Introduced.—H. 370, to amend the workmen's compensation act, proposes, among other things, **to define the words "doctor" and "physician and surgeon"** as meaning and including all duly licensed and practicing doctors of medicine and osteopathy who have been licensed in their profession under the laws of any state.

Maryland

Bill Enacted.—S. 8, has become Ch. 25 of the Laws of 1954. It amends the law relating to narcotic drugs by **defining the term narcotic drugs** as including drugs found by the state board of health after reasonable notice and opportunity for hearing to have habit-forming qualities and effects of habituation comparable to the narcotic drugs specifically mentioned in the statute.

Massachusetts

Bill Introduced.—H. 2550, proposes to authorize a special unpaid commission to make a study and investigation relative to the **establishment of a state medical and dental school.**

New York

Bills Introduced.—A. 3243 and S. 2788, to amend the municipal law, propose to authorize counties, cities, towns, and villages to provide **general ambulance service** for persons found within its boundaries. S. 2809, to amend the law relating to the **right to dissect the body of a deceased person,** proposes to authorize a dissection to be made upon the authorization of one person if two or more persons are charged by law with the duty of burial.

Rhode Island

Bills Introduced.—H. 870, proposes that each physician shall **report immediately** to the state director of health in writing and name, address, and age of each person known to him to be subject to recurrent attacks of **epilepsy** in any of its forms or to **recurrent periods of unconsciousness** uncontrolled by medical treatment. H. 880, proposes that **every hospital** incorporated by the general assembly of the state and sustained in whole or in part by charitable contributions or endowments shall be **liable for the negligence, carelessness, want of skill, or malicious act of any of its officers,** agents or employees in the management of or for the care or treatment of any of the patients or inmates of such hospital.

Virginia

Bills Introduced.—H.J.Res. 89, proposes to direct the advisory legislative council to study what changes should be made in the state program for the use of mental institutions in the care and treatment of patients. H.J.Res. 110, proposes the creation of a committee to make a study and report upon the **operations of the alcohol clinic** and related facilities for the care, treatment, and rehabilitation of alcoholics. S. 117, proposes that no person shall be required to submit to determination of the **amount of alcohol in his blood** at the time of any alleged criminal offense as shown by chemical analysis of blood, breath, or other bodily substance but should the accused request in writing such a determination, the arresting authority shall render full assistance in obtaining such determination. The results in such determination would be admissible in evidence but the failure of the accused to request such a determination is not evidence and would not be subject to comment in the trial of a case.

Bill Enacted.—H. 146, has become Ch. 100 of the Laws of 1954. It requires each **physician,** optometrist, or other person who upon examination of the eyes of any person determines that such person is **blind** to **immediately report** the name and address of such person to the proper state authority.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

MEDICAL NEWS

ARIZONA

Newsmen Honor State Medical Journal.—At the annual meet- of the Arizona Newspaper Association the Blake, Moffitt, and Towne award for general excellence (magazines, trade and industry) was presented to *Arizona Medicine*, journal of the Arizona Medical Association. The journal was judged winner under the supervision of the faculty of the school of journalism, University of Southern California.

ARKANSAS

Narcotic Violation.—Dr. Clifford M. Shelton, Cherry Valley, pleaded guilty, Sept. 14, 1953, in the U. S. District Court at Little Rock to a charge of violating the federal narcotic law. On Dec. 14 he was sentenced to serve a term of two years and was imprisoned in the Federal Correctional Institution, Texarkana, Texas.

CALIFORNIA

Study Club Program on Noise.—The Ear, Nose, and Throat Study Club in San Diego has planned a symposium on noise and deafness in industry for its meeting April 5 in the San Diego Hotel. Dinner, 6:30 p. m., will precede the 8 o'clock program, in which Dr. Howard P. House, Los Angeles, and Dr. Aram Glorig, Washington, D. C., will participate. Physicians, nurses, industrial hygienists, public health officials, compensation insurance company representatives, and industrial, aviation, and naval personnel interested in noise and its relation to deafness are invited.

Dr. Regan Retires as Legal Adviser.—Dr. Louis J. Regan, past president of the Los Angeles County Medical Association and its legal adviser for nearly 10 years, has resigned because of the press of his private law practice. A member of the association for more than 30 years, Dr. Regan is vice-chairman of the American Medical Association Committee on Medicolegal Problems. Before coming to Los Angeles he was in the regular Army Medical Corps and retired as a major in 1921. Dr. Regan, who is professor of legal medicine, College of Medical Evangelists, last year was elected president of the American Academy of Forensic Sciences.

Traveling Psychiatric Clinic.—The State Department of Mental Hygiene in cooperation with the State Department of Public Health operates a traveling psychiatric clinic, manned by a psychiatrist, psychologist, and psychiatric social worker from the Sonoma State Hospital, Eldridge, that visits Eureka every three months for five days at a time. Children who present mental and emotional problems are referred with their parents through local physicians or community agencies for diagnosis and recommendation. The mental health consultant from the state department takes part in the team's discussion of their impressions and recommendations and meets once a month with those responsible locally.

Personal.—Dr. Justin J. Stein, Los Angeles, has been elected surgeon general of the Military Order of the World Wars, for 1954.——Dr. Melvin A. Casberg, former Assistant Secretary of Defense, has become associated with the Santa Ynez Valley Medical Center in Solvang. Dr. Casberg previously was dean and associate professor of surgery at St. Louis University School of Medicine. He has served also as chairman of the Armed Forces Medical Policy Council and as surgical consultant to the Surgeon General of the Army.——Dr. John Gardner, formerly district health officer of the Los Angeles County Health Department, has been appointed assistant health officer to the department of public health, city of Long Beach.——Dr. A. Frank Brewer, chief, bureau of venereal diseases, state department of public health, San Francisco, since 1941, has resigned to become Merced County health officer and superintendent of the Merced County Hospital. For the first time the two county departments have been brought under one director.——Dr. Edward Kupka has been granted a two year leave of absence as chief, bureau of tuberculosis control, state department of public health, Berkeley, to accept an assignment under the foreign aid program as public health adviser to the government of Vietnam. His address during 1954 and 1955 will be c/o The American Consulate, Hanoi, Vietnam, French Indochina. In his absence Dr. H. Chesley Bush, a past president of the National Tuberculosis Association, will be acting chief. Dr. Bush has been assistant chief of the bureau of tuberculosis control for the last four years.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

COLORADO

Grant for Studies of Chronically Ill.—The W. K. Kellogg Foundation, Detroit, has given the Colorado Department of Public Health a three year grant to study programs for the chronically ill, aged, and aged sick, in the hope of "awakening community interest and responsibility." Dr. Ruth B. Howard, former public health staff director of the department, will direct the program, the first phase of which will be a survey of four communities for possible "pilot" programs. The grant calls for research to demonstrate ways and means of achieving coordinated community programs for services and facilities for the chronically ill, aged, and aged sick at the community levels.

Fluorine in Colorado Springs Water Supply.—At a meeting, Dec. 9, 1953, the El Paso County Medical Society, Colorado Springs, adopted the following resolution: "Whereas, there is substantial evidence that the water supply of Colorado Springs has contained a surplus amount (2.6 parts per million) of fluorine for about 75 years; Be it resolved that during the long practice of medicine in Colorado Springs it is the considered opinion of the members of the El Paso County Medical Society that we have not experienced any clinical symptoms which can be attributed to the use of such water. It is known, however, that a condition known as 'mottled enamel' can be produced by the use of water containing an excess of fluorine."

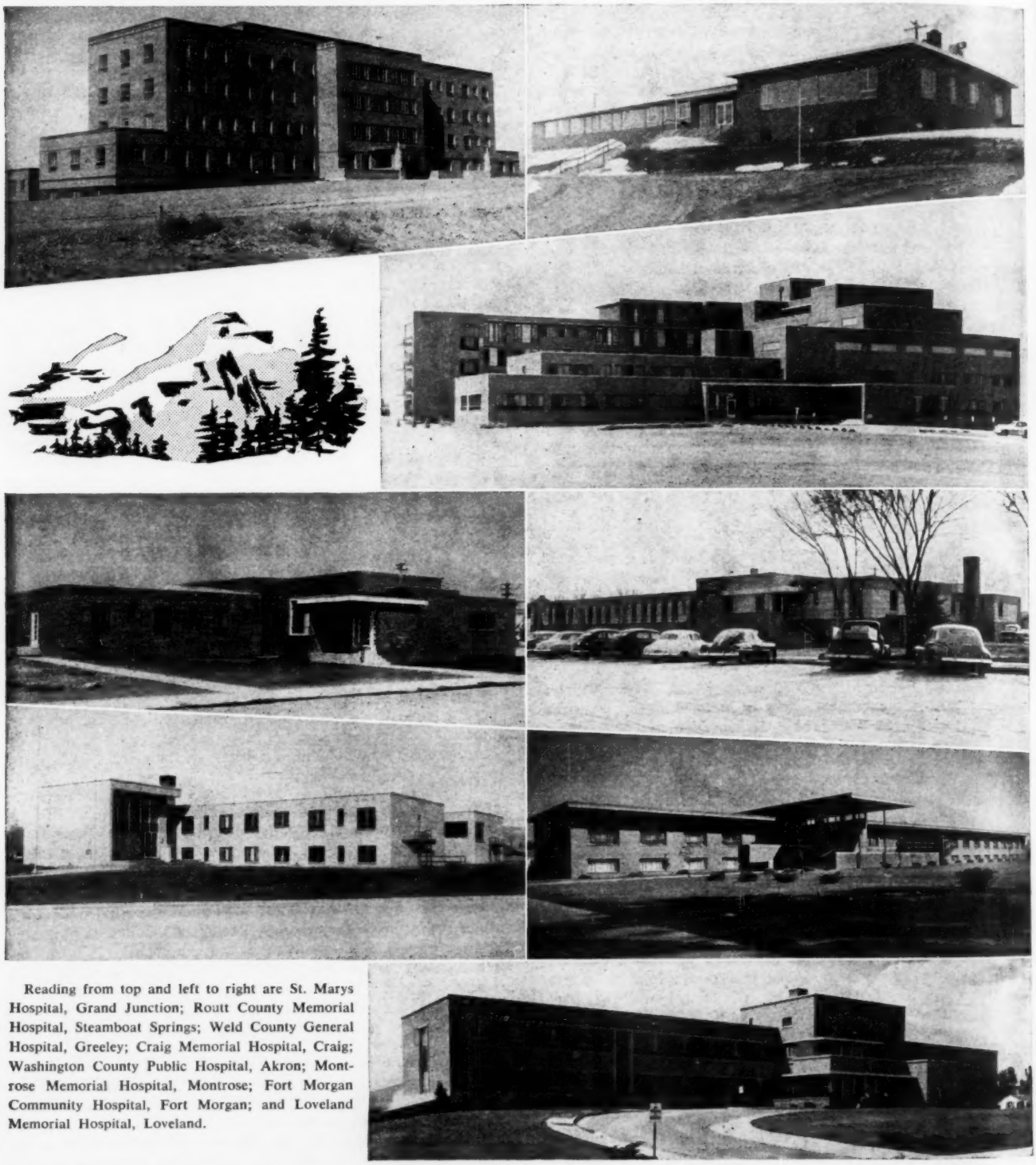
JUGs Aid in Nursing.—In view of the increasing need for nursing care in rural hospitals, an organization known as Just Us Girls, was formed in 1950 by a group of Akron junior and senior high school girls. At the new Washington County Public Hospital, the girl is given a 10 hour indoctrination course, after which she receives a uniform and works from four to six hours each week in one of five fields: nurse's aid, dietetics, laboratory, office, or occupational therapy. After 100 hours of volunteer service, she is entitled to an award pin. Most JUGs do not receive pay. An annual "JUG Day" is held in July, to which eighth graders, JUG alumnae, hospital auxiliary members, and all high school girls interested in nursing from the five counties surrounding Washington County are invited.

Society News.—At the annual meeting in Denver Dr. William A. Liggett, retiring president, Colorado State Medical Society, bestowed certificates of service on (1) Dr. Edgar A. Elliff, Sterling, "medical servant of good government," commending his example and sacrifice through service in the senate of the Colorado General Assembly; (2) Dr. George W. Stiles, Denver, "public health leader for more than 40 years," in recognition of his laboratory research concerning animal diseases transmissible to man; and (3) Mr. Robert L. Perkin, "science writer of fine competence and high integrity," for his contribution to better health through his enlightened and competent reporting of medical news. The Denver Medical Society recently paid tribute to its 46 members who had practiced 50 years or more and awarded engraved certificates to them.

Colorado Hospitals Built with Hill-Burton Aid.—In accordance with the Hill-Burton act and regulations of the U. S. Public Health Service, the Colorado State Department of Public Health, with the advice of the State Advisory Hospital Council, developed the original survey and plan in 1947. The survey revealed that existing acceptable general hospitals in the state met only 73.5% of the need for this type of facility, the tuberculosis hospitals met only 34.4% of the need, and the nervous and mental hospitals met 98% of the need. Of 46 public health centers needed, there were then only 2.

In the last seven years, with federal financial assistance under the Hill-Burton program, 11 general hospital projects with a total capacity of 626 beds and 3 public health centers, 2 of which are physically integrated into new hospital buildings, have been completed. Three new hospitals, with a combined capacity of 101 beds, and three public health centers are presently under construction. The total cost of hospitals and public health centers completed or under construction under the Hill-Burton program amounts to $11,338,636.45, of which $4,072,317.26 represents the "federal share." The projects shown on this page are representative of the type of construction that is being carried out under this program. Three of the general hospitals—one county owned and operated, one a voluntary nonprofit corporation, and one a Catholic Sister's hospital—have incorporated in their buildings space and facilities to house their local public health departments.

Since Colorado's average annual allotment of federal funds for hospital construction under this program thus far has been



Reading from top and left to right are St. Marys Hospital, Grand Junction; Routt County Memorial Hospital, Steamboat Springs; Weld County General Hospital, Greeley; Craig Memorial Hospital, Craig; Washington County Public Hospital, Akron; Montrose Memorial Hospital, Montrose; Fort Morgan Community Hospital, Fort Morgan; and Loveland Memorial Hospital, Loveland.

$652,458, only a portion of the needed construction could be participated in with federal funds. This becomes the more obvious in view of a recent writer's estimate that the cost of construction nationally during this period has averaged $15,410 per bed. In fact, during the past seven years only about one-third of the hospital and health center construction in Colorado has received financial assistance under the Hill-Burton act.

At present it appears that about 92% of the general hospital-bed needs in Colorado are adequately met by existing acceptable institutions and that about 22% of the needed public health centers have been provided. The original state plan, aimed first to meet the need in the general hospital field in areas of greatest need, has been fairly well carried out. The current revision of the plan shows only four areas, having less than 2% of the state population, with less than 80% of their general hospital needs met by existing acceptable well-programed facilities.

In the nervous and mental field there has been considerable major construction during the past six years, most of which has been of facilities to eliminate overcrowded conditions in the Colorado State Hospital at Pueblo. However, in view of the steady increase in population, the unmet need for nervous and mental hospital facilities is greater today than it was, as shown in the original plan. The Colorado Department of Public Health states that efforts will be continued to stimulate projects to meet the need for facilities in the fields of chronic disease, nervous and mental illness, and public health centers; but unless the Hill-Burton program is extended, additional construction in these fields will have to be accomplished with state or local funds.

MISSOURI

State Medical Meeting at St. Louis.—The Missouri State Medical Association will hold its 96th annual session at the Jefferson Hotel, St. Louis, April 4-7, under the presidency of Dr. Guy N. Magness, University City, who was recently named by the council to fill the uncompleted term of the late Dr. E. Claude Bohrer. At 9:30 a. m. Monday there will be a panel on intervertebral disks, with Dr. Ralph A. Kinsella, St. Louis, as moderator and Drs. George E. Roulhac, J. Albert Key, and Andrew B. Jones, all of St. Louis, as collaborators. Dr. Daniel L. Sexton, St. Louis, will preside at the round-table luncheon Monday and Dr. Paul O. Hageman, St. Louis, at the round-table luncheon Tuesday. Clinics will be conducted concurrently Tuesday, 2:45-4:15 p. m., at the Desloge Auditorium, St. Louis University School of Medicine, and the Wohl Auditorium, Washington University School of Medicine. Special busses will be available for transportation to and from the clinics. Out-of-state speakers for the sessions include:

Max Miller, Cleveland, Renal Complications in Diabetes.
Conrad G. Collins, New Orleans, Toxemias of Pregnancy.
Alfred M. Large, Detroit, Problems in Gallbladder Surgery.
William A. Altemeier, Cincinnati, Use of Antibiotics in Surgery.
M. Edward Davis, Chicago, Studies of Estrogen Therapy in Pregnancy.
Gilbert B. Forbes, Rochester, N. Y., Febrile Convulsions in Childhood.
Rudolf J. Noer, Louisville, Diverticulitis.
Henry H. Turner, Oklahoma City, Endocrine Problems of Childhood.
John C. MacQueen, Iowa City, Present Status of Care of Poliomyelitis.
J. Garrott Allen, Chicago, Problems in Blood Preservation.
Donald P. Morris, Champaign, Ill., Differential Diagnosis of Psychogenic Symptoms.

NEW YORK

Symposium on Acute Infectious Diseases.—This symposium will be presented by the Erie County chapter of the New York State Academy of General Practice, with the co-sponsorship of the Lederle Laboratories Division of the American Cyanamid Company, at the Hotel Statler, Buffalo, April 10. Dr Abraham H. Aaron, Buffalo, will serve as moderator for the following morning session:

Significance of Fever in Infection, Ivan L. Bennett Jr., New Haven, Conn.
Rheumatic Fever, Arild E. Hansen, Galveston, Texas.
Immunological Aspects of Poliomyelitis, Herbert A. Wenner, Kansas City, Kan.

Questions and a panel discussion will precede luncheon, at which the chairman will be Dr. William H. Merrilees, Lancaster, president, Erie County chapter, New York State Academy of General Practice. Dr. Mitchell I. Rubin, Buffalo, will be moderator for the following program in the afternoon:

Diagnosis and Management of Acute Poliomyelitis, Alexander J. Steigman, Louisville, Ky.
Infectious Mononucleosis, Sidney Leibowitz, New York.
Diagnosis and Treatment of Streptococcal Infections, Erwin Neter, Buffalo.
Influenza, Joseph A. Bell, Bethesda, Md.

Questions and a panel discussion will precede hors d'oeuvres, 5-6 p. m. Wives of physicians are welcome. No fee is required for attendance.

New York City

Broadcast on Malignant Tumors.—On invitation of the Medical Society of the County of New York, Dr. William Trevor will discuss "Malignant Tumors" on its radio program over station WNYC, April 8, at 10:30 a. m.

Charter Day Lecture by Dr. Bauer.—On April 7, 5 p. m., Dr. Louis H. Bauer, Hempstead, recent past president of the American Medical Association, will give the annual Charter Day lecture, "Medical Ethics and the World Medical Association," at New York Medical College, Flower and Fifth Avenue Hospitals, under the sponsorship of Alpha Kappa Kappa fraternity.

Dr. Selye to Lecture on Stress Research.—Eta chapter, Phi Lambda Kappa fraternity, will present the annual lecture, "Recent Advances in Stress Research," by Dr. Hans Selye, director, Institute of Medicine and Experimental Surgery, University of Montreal Faculty of Medicine, Montreal, Canada, April 8, 4:30 p. m. in the Main Lecture Hall, New York University College of Medicine, 477 First Ave. Collation will follow in the board room.

GENERAL

Proctologists Meet in Chicago.—The annual convention of the International Academy of Proctology will be held at the Palmer House, Chicago, April 8-11. A motion picture seminar of proctologic surgery (including office techniques) will be conducted Sunday. The program is available on request to the executive office of the academy, 43-55 Kissena Blvd., Flushing, N. Y.

American Board of Dermatology and Syphilology.—This organization, previously located at 66 East 66th St., New York, has moved to 129 East 52nd St., New York 22. The board will hold written examinations Sept. 2 and oral examinations Oct. 15-18. Final date for filing application is May 1. Correspondence should be addressed to Miss Janet Newkirk, Executive Secretary, 129 East 52nd St., New York 22.

Anatomists Meet in Galveston.—The 67th meeting of the American Association of Aanatomists will convene in Galveston, April 7-9, by invitation of the University of Texas. "Techniques for the Microscopic Study of Small Blood Vessels and Blood Flow" will be considered during the first Conference on Microcirculatory Physiology and Pathology, which will be held at the university April 8-9 under the sponsorship of the association. Presentations by physicians include:

Eliot R. Clark, Philadelphia, Transparent Chamber Technique for the Microscopic Study of Living Blood Vessels.
Henry S. Forbes, Milton, Mass., Study of Blood Vessels on Cortex of Living Mammalian Brain—Description of Technique.
David Minard, Bethesda, Md., The Lucite Calvarium; Method for Direct Microscopic Observation of the Brain.
Charles N. Loeser, Cleveland, In Vivo Near-Ultraviolet Transillumination with the Quartz-Rod Technique; Application in Electronic Quantitation of Cellular Light Absorption and Nuclear Fluorescence.
Edward H. Bloch, Cleveland, Microscopic Study of the Circulating Blood and Small Blood Vessels in the Bulbar Conjunctiva of Man.

World Health Day.—April 7, celebrated as World Health Day in commemoration of the establishment of the World Health Organization, will this year pay a special honor to "The Nurse—Pioneer of Health." Personnel are most needed for public health nursing (health visiting), including midwifery, pediatric nursing, and surgical and medical nursing. The candidate must be a registered nurse and should have had at least one year of post-graduate work in one of the main specialties and at least two years' experience in her specialty. There is also a need in many

regions for male nurses who have these qualifications. WHO points out that posts are open in the field of international nursing, with increasing opportunities as the principles of mutual aid between nations are more widely accepted.

Pediatricians Meet in Los Angeles.—The spring session of the American Academy of Pediatrics will convene at the Biltmore Hotel, Los Angeles, April 5-7. The Tuesday afternoon session will be devoted to a member question panel, for which Dr. John M. Adams, Los Angeles, will serve as moderator. Clinical sessions will be held Wednesday afternoon at the Los Angeles County Hospital (Pediatric Dermatology; Practical Aspects of the Care of Premature Infants; and Demonstration of the Management of Acute Poliomyelitis); University of California at Los Angeles School of Medicine (Practical Therapeutics in the Common Problems of Neurologic Disease, Orthopedic Disease, and Heart Disease); and Childrens Hospital, Los Angeles (Common Hematologic Problems in Infancy and Childhood; Management of the Common Orthopedic Problems in Childhood; A Frequently Unrecognized Correctable Cardiac Anomaly; Management of the Diabetic Child; and Common Behavior Problems in Childhood).

Course in Physiology and Pathology of the Liver.—At its annual meeting, April 6-7 in the Hotel Benjamin Franklin, Philadelphia, the International Association of Medical Museums will present a course in pathological physiology and surgical pathology of the liver. Dr. Averill A. Liebow, professor of pathology, Yale University School of Medicine, New Haven, Conn., will preside, and Dr. Edward A. Gall, professor of pathology, University of Cincinnati School of Medicine, will serve as moderator. Participating physicians include Drs. Abraham Cantarow and Paul Gyorgy, Philadelphia; Jesse L. Bollman, Rochester, Minn.; Irving B. Brick, Hans F. Smetana, I. Nathan Dubin, and Col. James E. Ash, Washington, D. C.; Leon Schiff and Benjamin H. Landing, Cincinnati; Charles S. Davidson, Robert R. Linton, Stanley L. R. Robbins, and H. Edward MacMahon, Boston; Hans Popper, Chicago; Oscar D. Ratnoff, Cleveland; Stanley E. Bradley, New York; Gerald Klatskin, New Haven, Conn.; and Hugh A. Edmondson, Los Angeles. The course will be open to all physicians; registration fee, $4.

Allergists Meet in Miami Beach.—The American College of Allergists will hold its decennial congress at the Roney Plaza Hotel, Miami Beach, Fla., April 5-10. On Wednesday, 8 p. m., the following psychosomatic workshops on emotional factors in allergic disorders will be presented:

Psychoanalytically Oriented Interviews—Tape Recording, Harold A. Abramson, New York, moderator; M. Murray Peshkin, New York, reporter.

Actual Diagnostic Play Session with an Allergic Child, Dorothy W. Baruch, Ph.D., Beverly Hills, Calif., moderator; Hal M. Davison, Atlanta, reporter.

Psychotherapeutic Group Interview with the Parents of Allergic Children, Hyman Miller, Beverly Hills, Calif., moderator; Bennett Kraft, Indianapolis, reporter.

Tape Recordings of Interviews with Allergic Patients, John H. Mitchell, Columbus, Ohio, moderator; Homer E. Prince, Houston, Texas, reporter.

Dr. J. Warrick Thomas, Richmond, Va., will serve as moderator for a round-table luncheon, "Pitfalls in the Diagnosis and Management of Asthma" Thursday, 12:30-2 p. m. Round-table luncheons will be conducted on Friday, and in the evening Dr. Hyman Miller will serve as moderator for a panel on psychosomatic allergy. All allergists are invited to attend the program under the direction of the Association of Allergists for Mycological Investigation, which will be held in the card room, April 7, beginning at 2 p. m.

American College of Physicians.—The American College of Physicians will hold its 35th annual session at the Conrad Hilton Hotel, Chicago, April 5-9. The James D. Bruce memorial lecture on "Endemic Goiter; A Problem in Preventive Medicine," will be delivered by Dr. David Marine, Rehoboth Beach, Del. Clinical-pathological conferences are scheduled for Tuesday, Wednesday, and Thursday, 4-5 p. m., and Friday, 3-4 p. m. Tuesday at 2 p. m. Sir W. Russell Brain, D.M. (Oxon), London, will speak on cervical spondylosis. Wednesday at 2 p. m. the John Phillips memorial lecture, "Tubular Renal Failure after Shock and in Nephritis," will be delivered by Donald D. Van Slyke, Ph.D., Brookhaven National Laboratory, Upton, N. Y. At 2:30 p. m. Dr. U. S. von Euler, professor of physiology, Karolinska Institutet, Stockholm, Sweden, will present the Lilly Lecture, "Physiological Basis for the Clinical Use of Nor-Adrenaline," after which the clinical usefulness of corticotropin (ACTH) in liver disease will be discussed by Victor M. Sborov, assistant professor of medicine, University of California Medical School, San Francisco. A panel on pancreatic disease will be presented at 3:20 and a consult panel program at 4 p. m. The annual convocation will take place at 8:40 p. m. and will include presentation of the John Phillips and the James D. Bruce memorial medals and the Alfred Stengel memorial award. The convocation oration, "The Past and Future of the Atomic Development," will be delivered by Enrico Fermi, professor of physics, University of Chicago. The annual banquet will be held Thursday, 8 p. m. Dr. Howard Wakefield, Chicago, will serve as toastmaster, and Lawrence A. Kimpton, Ph.D., chancellor of the University of Chicago, will present the address of the day, "Medicine and the Educational Process." A symposium on pediatrics has been scheduled for Tuesday. The motion picture "Rheumatoid Disorders—Pharmacology and Clinical Evaluation of a Modern Therapeutic Agent" has been scheduled for Tuesday, 5 p. m.; a color-sound film entitled "Radioisotopes—Their Application to Humans as Tracer Studies and for Therapeutic Use" will be shown Wednesday, 5 p. m.; and "Arterial Insufficiency of the Extremities—Physiology, Diagnosis and Treatment" will be shown Thursday at the same time.

After the convention a seminar party will leave Chicago (April 10, 10:30 a. m.) by the American Airlines for a week in Mexico City, where a scientific program and postconvention tour have been arranged.

CORRECTION

Denver Medical Society Builds Medical Library.—In THE JOURNAL, March 27, 1954, page 1103, the statement that the Colorado State Medical Society is currently constructing a $350,000 medical library building is erroneous. It is the Denver Medical Society that is constructing a $350,000 medical library building.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.
1954 Annual Meeting, San Francisco, June 21-25.
1954 Clinical Meeting, Miami, Florida, Nov. 29-Dec. 2.
1955 Annual Meeting, Atlantic City, N. J., June 6-10.
1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.
1956 Annual Meeting, Chicago, June 11-15.

ALABAMA, MEDICAL ASSOCIATION OF THE STATE OF, Mobile, April 15-17. Dr. Douglas L. Cannon, 537 Dexter Ave., Montgomery, Secretary.

AMERICAN ACADEMY OF NEUROLOGY, Shoreham Hotel, Washington, D. C., April 29-May 1. Dr. Alexander T. Ross, 1040 West Michigan St., Indianapolis 7, Secretary.

AMERICAN ASSOCIATION OF ANATOMISTS, Hotel Galvez, Galveston, Texas, April 7-9. Dr. Normand L. Hoerr, 2109 Adelbert Road, Cleveland 6, Secretary.

AMERICAN ASSOCIATION FOR CLEFT PALATE REHABILITATION, Webster Hall Hotel, Pittsburgh, May 14-15 Dr. Jack Matthews, 1617 Cathedral of Learning, University of Pittsburgh, Pittsburgh 13, Secretary.

AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS, Shawnee Inn, Shawnee-on-Delaware, Pa., May 26-28. Dr. John Taylor, 2 East 54th St., New York 22, Secretary.

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE, Hotel Taft, New Haven, Conn., May 6-8. Dr. Samuel X. Radbill, 7043 Elmwood Ave., Philadelphia 42, Secretary.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS, Ambassador Hotel, Atlantic City, N. J., April 11-15. Dr. John Y. Sugg, 1300 York Ave., New York, Secretary.

AMERICAN ASSOCIATION ON MENTAL DEFICIENCY, Marlborough-Blenheim Hotel, Atlantic City, N. J., May 18-22. Dr. Neil A. Dayton, P. O. Box 96, Willimantic, Conn., Secretary.

AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS, Philadelphia, Pa., April 8-10. Dr. Alan R. Moritz, 2085 Adelbert Road, Cleveland 6, Secretary.

AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Drake Hotel, Chicago, April 6-8. Dr. Chester C. Guy, 5800 Stony Island Ave., Chicago 37, Secretary.

AMERICAN ASSOCIATION FOR THE STUDY OF NEOPLASTIC DISEASES, Lord Baltimore Hotel, and St. Agnes Hospital, Baltimore, April 29-May 1. Dr. Bruce H. Sisler, P. O. Box 268, Gatlinburg, Tenn., Executive Secretary.

AMERICAN ASSOCIATION FOR THORACIC SURGERY, Sheraton-Mt. Royal Hotel, Montreal, Canada, May 3-5. Dr. Paul C. Samson, 2938 McClure St., Oakland 9, Calif., Secretary.

AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION, Hotel Statler, Boston, May 25-26. Dr. J. Johnson Putney, 255 South 17th St., Philadelphia 3, Secretary.

AMERICAN COLLEGE OF ALLERGISTS, Roney Plaza Hotel, Miami Beach, Fla., April 5-10. Dr. Fred W. Wittich, 423 LaSalle Medical Bldg., Minneapolis 2, Secretary.

AMERICAN COLLEGE OF CARDIOLOGY, Conrad Hilton Hotel, Chicago, May 27-29. Dr. Philip Reichert, 140 West 57th St., New York 19, Secretary.

AMERICAN COLLEGE OF PHYSICIANS, Conrad Hilton Hotel, Chicago, April 5-9. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

AMERICAN DERMATOLOGICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, W. Va., April 13-17. Dr. J. Lamar Callaway, Duke Hospital, Durham, N. C., Secretary.

AMERICAN FEDERATION FOR CLINICAL RESEARCH, Haddon Hall, Atlantic City, N. J., May 2. Dr. Lawrence E. Hinkle Jr., 525 East 68th St., New York 21, Secretary.

AMERICAN GOITER ASSOCIATION, The Somerset, Boston, April 29-May 1. Dr. John C. McClintock, 149½ Washington Ave., Albany 10, N. Y., Secretary.

AMERICAN GYNECOLOGICAL SOCIETY, The Homestead, Hot Springs, Va., May 20-22. Dr. John I. Brewer, 104 South Michigan Blvd., Chicago, Secretary.

AMERICAN LARYNGOLOGICAL ASSOCIATION, Hotel Statler, Boston, May 27-28. Dr. Harry P. Schenck, 326 South 19th St., Philadelphia 3, Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Hotel Statler, Boston, May 25-27. Dr. C. Stewart Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

AMERICAN OTOLOGICAL SOCIETY, Hotel Statler, Boston, May 23-24. Dr. John R. Lindsay, 150 East 59th St., Chicago 37, Secretary.

AMERICAN PEDIATRIC SOCIETY, The Inn, Buck Hill Falls, Pa., May 3-5. Dr. A. C. McGuinness, 237 Medical Laboratories, University of Pennsylvania, Philadelphia 4, Secretary.

AMERICAN PHYSIOLOGICAL SOCIETY, Ambassador Hotel, Atlantic City, N. J., April 10-16. Dr. Milton O. Lee, 2101 Constitution Ave., Washington 25, D. C., Executive Secretary.

AMERICAN PSYCHIATRIC ASSOCIATION, St. Louis, May 3-7. Dr. R. Finley Gayle Jr., 6300 Three Chopt Road, Richmond 21, Va., Secretary.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, Atlantic City, N. J., April 12-16. Dr. Philip Handler, Duke University, Durham, N. C., Secretary.

AMERICAN SOCIETY FOR CLINICAL INVESTIGATION, Haddon Hall, Atlantic City, N. J., May 3. Dr. William M. M. Kirby, Univ. of Washington School of Medicine, Seattle 5, Secretary.

AMERICAN SOCIETY FOR EXPERIMENTAL PATHOLOGY, Atlantic City, N. J., April 12-16. Dr. Cyrus C. Erickson, 874 Union Ave., Memphis 3, Tenn., Secretary.

AMERICAN SOCIETY OF MAXILLOFACIAL SURGEONS, Washington, D. C., April 25-28. Dr. Casper M. Epsteen, 25 East Washington St., Chicago 2, Secretary.

AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, Atlantic City, N. J., April 12-16. Dr. Carl C. Pfeiffer, 1853 West Polk St., Chicago 12, Secretary.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY, Roosevelt Hotel, New Orleans, May 13-15. Dr. Herbert H. Thomas, 920 South 19th St., Birmingham, Ala., Secretary.

AMERICAN SURGICAL ASSOCIATION, Hotel Cleveland, Cleveland, April 28-30. Dr. R. Kennedy Gilchrist, 59 East Madison St., Chicago 3, Secretary.

AMERICAN TRUDEAU SOCIETY, The Ambassador, Atlantic City, N. J., May 17-21. Dr. William G. Childress, 1790 Broadway, New York 19, Secretary.

ARIZONA MEDICAL ASSOCIATION, San Marcos Hotel, Chandler, April 25-28. Dr. Dermont W. Melick, 541 Security Bldg., Phoenix, Secretary.

ARKANSAS MEDICAL SOCIETY, Goldman Hotel, Fort Smith, April 19-21. Dr. J. J. Monfort, 215 Kelley Bldg., Fort Smith, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS, Chalfonte-Haddon Hall, Atlantic City, N. J., May 4-5. Dr. W. Barry Wood Jr., 600 S. Kingshighway Blvd., St. Louis 10, Secretary.

CALIFORNIA MEDICAL ASSOCIATION, Hotel Biltmore, Los Angeles, May 9-13. Mr. John Hunton, 450 Sutter St., San Francisco 8, Executive Secretary.

CATHOLIC HOSPITAL ASSOCIATION OF THE UNITED STATES AND CANADA, Atlantic City, N. J., May 17-20. Rev. John J. Flanagan, 1438 South Grand Blvd., St. Louis 4, Director.

CONFERENCE ON MICROCIRCULATORY PHYSIOLOGY AND PATHOLOGY, University of Texas, Galveston, Texas, April 8-9. Dr. Edward H. Bloch, Western Reserve University School of Medicine, Dept. of Anatomy, Cleveland 6, Chairman.

CONNECTICUT STATE MEDICAL SOCIETY, Bulkeley High School, Hartford, April 27-29. Dr. Creighton Barker, 160 St. Ronan St., New Haven, Executive Secretary.

EASTERN SECTION, AMERICAN CONGRESS OF PHYSICAL MEDICINE, Newark, N. J., April 10. Dr. H. L. Rudolph, 400 North Fifth St., Reading, Pa., Secretary.

EASTERN STATES HEALTH EDUCATION CONFERENCE, New York Academy of Medicine, New York, April 29-30. Dr. Iago Galdston, 2 East 103d St., New York 19, Secretary.

FEDERATION OF AMERICAN SOCIETIES for EXPERIMENTAL BIOLOGY, Convention Hall, Atlantic City, N. J., April 12-16. Dr. M. O. Lee, 2101 Constitution Ave., Washington 25, D. C., Secretary.

FLORIDA MEDICAL ASSOCIATION, Hollywood Beach Hotel, Hollywood, April 25-28. Dr. Samuel M. Day, P. O. Box 1018, Jacksonville, Secretary.

GEORGIA, MEDICAL ASSOCIATION OF, Hotel Dempsey and Macon Auditorium, Macon, May 2-5. Dr. David H. Poer, 875 West Peachtreet St. N.E., Atlanta, Secretary.

HAWAII MEDICAL ASSOCIATION, Maybel Smyth Bldg., Honolulu, May 13-16. Dr. Samuel L. Yee, 510 S. Beretania St., Honolulu 13, Secretary.

ILLINOIS STATE MEDICAL SOCIETY, Hotel Sherman, Chicago, May 18-21. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

INDUSTRIAL HEALTH CONFERENCE, Hotel Sherman, Chicago, April 24-30. Dr. E. C. Holmblad, 28 East Jackson Blvd., Chicago 4, Managing Director.

INDUSTRIAL MEDICAL ASSOCIATION, Hotel Sherman, Chicago, April 27-30. Dr. Arthur K. Peterson, 28 East Jackson Blvd., Suite 1300, Chicago 4, Secretary.

IOWA STATE MEDICAL SOCIETY, Des Moines, April 25-28. Dr. Allan B. Phillips, 529 36th St., Des Moines 12, Secretary.

JOHN A. ANDREW CLINICAL SOCIETY, Memorial Hospital, Tuskegee Institute, Ala., April 11-16. Dr. Eugene H. Dibble Jr., John A. Andrew Memorial Hospital, Tuskagee Institute, Ala., Secretary.

KANSAS MEDICAL SOCIETY, Hotel Jayhawk, Topeka, May 2-6. Dr. D. D. Vermillion, 315 West Fourth St., Topeka, Secretary.

LOUISIANA STATE MEDICAL SOCIETY, Roosevelt Hotel, New Orleans, May 20-22. Dr. C. Grenes Cole, 1430 Tulane Ave., New Orleans 12, Secretary.

MARYLAND, MEDICAL AND CHIRURGICAL FACULTY OF THE STATE OF, Baltimore, April 27-28. Dr. Everett S. Diggs, 1211 Cathedral St., Baltimore, Secretary.

MASSACHUSETTS MEDICAL SOCIETY, Hotel Statler, Boston, May 18-20. Dr. Robert W. Buck, 22 Fenway, Boston 15, Secretary.

MISSISSIPPI STATE MEDICAL ASSOCIATION, Hotel Heidelberg, Jackson, May 11-13. Mr. R. B. Kennedy, 507 First Federal Bldg., Jackson, Executive Secretary.

MISSOURI STATE MEDICAL ASSOCIATION, Hotel Jefferson, St. Louis, April 4-7. Dr. E. Royce Bohrer, 634 North Grand Blvd., St. Louis 3, Secretary.

NATIONAL CONFERENCE ON HEALTH IN COLLEGES, Hotel Statler, New York, May 5-8. Miss Charlotte V. Leach, 12th Floor, 1790 Broadway, New York 19, Secretary.

NATIONAL TUBERCULOSIS ASSOCIATION, Ambassador, Chelsea and Ritz-Carlton Hotels, Atlantic City, N. J., May 17-21. Mr. Kemp D. Battle, 1790 Broadway, New York 19, Secretary.

NEBRASKA STATE MEDICAL ASSOCIATION, Hotel Cornhusker, Lincoln, May 10-13. Dr. R. B. Adams, 1315 Sharp Bldg., Lincoln 8, Secretary.

NEW JERSEY, MEDICAL SOCIETY OF, Haddon Hall, Atlantic City, May 16-19. Dr. Marcus H. Greifinger, 315 West State St., Trenton 8, Secretary.

NEW MEXICO MEDICAL SOCIETY, Hotel LaFonda, Santa Fe, May 13-15. Mr. R. R. Marshall, 221 West Central Ave., Albuquerque, Executive Secretary.

NEW YORK, MEDICAL SOCIETY OF THE STATE OF, Hotel Statler, New York, May 10-14. Dr. Walter P. Anderton, 386 Fourth Avenue, New York 16, Secretary.

NORTH CAROLINA, MEDICAL SOCIETY OF THE STATE OF, Hotel Carolina, Pinehurst, May 3-5. Dr. Millard D. Hill, 203 Capital Club Bldg., Raleigh, Secretary.

NORTH DAKOTA STATE MEDICAL ASSOCIATION, Grand Forks, May 1-4. Mr. Lyle A. Limond, Box 1198, Bismarck, Executive Secretary.

OHIO STATE MEDICAL ASSOCIATION, Columbus, April 13-15. Mr. Charles S. Nelson, 79 East State St., Columbus 15, Executive Secretary.

OKLAHOMA STATE MEDICAL ASSOCIATION, Municipal Auditorium, Oklahoma City, May 9-12. Mr. R. H. Graham, 1227 Classen Drive, Oklahoma City, Executive Secretary.

PACIFIC NORTHWEST SOCIETY OF PATHOLOGISTS, Amphitheater, Dept. of Pathology, University of Washington School of Medicine, Seattle, April 23-24. Dr. John L. Whitaker, 315 South K St., Tacoma 3, Wash., Secretary.

RHODE ISLAND MEDICAL SOCIETY, Rhode Island Medical Society Library, Providence, May 4-5. Dr. Thomas Perry Jr., 106 Francis St., Providence 3, Secretary.

SOCIETY OF AMERICAN BACTERIOLOGISTS, William Penn Hotel, Pittsburgh, May 2-7. Dr. John Hays Bailey, Sterling-Winthrop Research Institute, Rensselaer, N. Y., Secretary.

SOCIETY OF NEUROLOGICAL SURGEONS, The Waldorf Astoria, New York, April 23-24. Dr. Edgar F. Fincher, Emory University, Ga., Secretary.

SOCIETY FOR PEDIATRIC RESEARCH, Buck Hill Falls Inn, Buck Hill Falls, Pa., May 4-6. Dr. Sydney S. Gellis, 330 Brookline Ave., Boston 15, Secretary.

SOUTH CAROLINA MEDICAL ASSOCIATION, Ocean Forest Hotel, Myrtle Beach, May 11-13. Dr. Robert Wilson, 165 Rutledge Ave., Charleston, Secretary.

South Dakota State Medical Association, Marvin Hughitt Hotel, Huron, May 18-20. Mr. J. C. Foster, 300 First National Bank Bldg., Sioux Falls, Secretary.

Southwest Allergy Forum, Roosevelt Hotel, New Orleans, May 9-11. Dr. Stanley Cohen, S. W. Allergy Forum, 1441 Delachaise St., New Orleans 15, Secretary.

Student American Medical Association, Sherman Hotel, Chicago, May 1-3. Mr. Russell F. Staudacher, 535 N. Dearborn St., Chicago 10, Executive Secretary.

Tennessee State Medical Association, Nashville, April 18-21. Mr. V. O. Foster, 706 Church St., Nashville 3, Executive Secretary.

Texas Medical Association, Gunter Hotel, San Antonio, May 3-5. Dr. J. M. Travis Sr., 1801 Lamar Blvd., Austin, Secretary.

United States-Mexico Border Public Health Association, Albuquerque, N. Mex., April 6-9. Sidney B. Clark, 314 U. S. Court House, El Paso, Texas, Secretary.

Western Branch, American Public Health Association, Olympic Hotel, Seattle, May 9-12. Mrs. L. Amy Darter, Division of Laboratories, State Dept. of Public Health, Berkeley, Calif., Secretary.

Western Industrial Medical Association, Hotel Biltmore, Los Angeles, May 8. Dr. Edward J. Zaik, 740 S. Olive St., Los Angeles 14, Secretary.

FOREIGN AND INTERNATIONAL

Association of Surgeons of Great Britain and Ireland, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

British Medical Association, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

Canadian Medical Association, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5. Ontario, Canada, General Secretary.

Conference of International Union Against Tuberculosis, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

Congress of International Association for the Prevention of Blindness, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

Congress of International Association for the Study of the Bronchi, Geneva, Switzerland, June 5-6, 1954. Professor A. Montandon, Clinique Universitarie d O.R.L., Hôpital Cantonal, Geneva, Switzerland, Chairman.

European Society of Cardiovascular Surgery, Edinburgh, Scotland, July 9-10, 1954. For information address: Mr. A. J. Slessor, Department of Surgery, University New Building, Edinburgh 8, Scotland.

Health Congress of the Royal Sanitary Institute, Scarborough, England, April 27-30, 1954. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

International Anesthesia Research Society, Los Angeles, Calif., U. S. A., Oct. 10-14, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S.W., Rochester, Minn., U. S. A.

International Cancer Congress, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

International Conference on Thrombosis and Embolism, Basle, Switzerland, July 20-24, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

International Congress of Clinical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Mo., U. S. A., Chairman, Committee on Arrangements.

International Congress on Diseases of the Chest, Barcelona, Spain, Oct. 4-8, 1954 Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Ill., U. S. A., Executive Secretary.

International Congress on Group Psychotherapy, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

International Congress on Gynecology and Obstetrics, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

International Congress of Hematology, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6°, France, Secretary.

International Congress of the History of Medicine, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

International Congress of Hydroclimatism and Thalassotherapy, Opatija, Yugoslavia, May 8-13, 1954. Prof. C. Plavsic, Zeleni venac 1, Belgrade, Yugoslavia, Secretary General.

International Congress of Industrial Medicine, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

International Congress of Internal Medicine, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

International Congress of International College of Surgeons, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Ill., U. S. A., Secretary-General.

International Congress on Mental Health, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

International Congress of Military Medicine and Pharmacy, Buenos Aires, Argentine, April 21-28, 1954. Direcion General de Sanidad Militar, Pozos 2045, Buenos Aires, Argentine.

International Congress of Nutrition, Amsterdam, Netherlands, Sept. 13-17, 1954. Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands, General Secretary.

International Congress of Ophthalmology, University of Montreal and McGill University, Montreal, Canada, Sept. 9-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn., U. S. A., Secretary-General.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

International Congress of Psychology, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

International Congress for Psychotherapy, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

International Congress of the Sociedad de Médicos Internos, Residentes y Becarios del Instituto Nacional de Cardiologia de Mexico, Acapulco, Mexico, April 21-24, 1954. For information address: Dr. Jorge Soberón Acevedo, Avenida, Cuauhtemoc No. 300, Mexico, D. F., Mexico.

International Gerontological Congress, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

International Institute on Child Psychiatry, Toronto, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, N. Y., U. S. A., Executive Officer.

International Poliomyelitis Congress, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

International Society of Angiology, North American Chapter, Hotel Mark Hopkins, San Francisco, Calif., U. S. A., June 19, 1954. Dr. Henry Haimovici, 105 East 90th St., New York, N. Y., U. S. A., Secretary.

International Society of Blood Transfusion, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12°, France.

International Society for Cell Biology, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

International Society of Geographical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

Irish Medical Association, Killarney, Ireland, July 7-10, 1954. Dr. P. J. Delaney, 10, Fitzwilliam Place, Dublin, Ireland, Medical Secretary.

Journees Medicales, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

Latin American Congress on Gynecology and Obstetrics, Sao Paulo, Brazil, July 10-15, 1954. Prof. Dr. Jairo Ramos, av. Brigaderio Luiz Antonio, 278-8° andar, Sao Paulo, Brazil, Chairman of Organizing Committee of Medical Congresses.

Latin American Congress on Mental Health, Sao Paulo, Brazil, July 17-22. For information address: Professor A. C. Pacheco e Silva, Avenida Brigadeiro Luiz Antonio 651, Sao Paulo, Brazil.

Medical Women's International Association Congress, Lake Garda, Italy, Sept. 15-21, 1954. Dr. Ada Chree Reid, 118 Riverside Drive, New York 24, N. Y., U. S. A., President.

Pan American Congress of Child Welfare and Pediatrics, Sao Paulo, Brazil, July 15-21, 1954. For information address: Dr. Jairo Ramos, Avenida Brigaderio Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

Pan American Congress of Gastroenterology, Sao Paulo, Brazil, July 19-24, 1954. For information address: Dr. Jairo Ramos, Avenida Brigadeiro Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

Pan American Congress of Ophthalmology (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, Consolacao 1151, São Paulo, Brazil, President.

Pan American Congress of Veterinary Medicine, Sao Paulo, Brazil, April 3-10, 1954. Dr. Joao Soares Veiga, Rua Pires da Mota 159, Sao Paulo, Brazil, Chairman of Organizing Committee

Pan-Pacific Surgical Congress, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

Sectional Meeting, American College of Surgeons, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

South American Congress of Angiology, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

WORLD CONGRESS OF CARDIOLOGY, Washington, D. C., U. S. A., Sept. 12-18, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

WORLD FEDERATION OF OCCUPATIONAL THERAPISTS, Edinburgh, Scotland, August 17, 1954.

WORLD MEDICAL ASSOCIATION, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Held in approved medical schools where there are five or more candidates. Dates: Feb. 9-10; April 20-21 (Part II only); June 22-23; Sept. 7-8 (Part I only). Candidates may file examinations at any time but the National Board must receive them at least six weeks before the date of the examination they wish to take. New candidates should apply by formal registration; registered candidates should notify the board by letter. Sec., Dr. John P. Hubbard, 133 S. 36th St., Philadelphia 4.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1954. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

ARIZONA:* *Examination.* Phoenix, April 21-23. *Reciprocity.* Phoenix, April 24. Sec., Mr. Robert Carpenter, 541 Security Bldg., Phoenix.

ARKANSAS:* *Examination.* Little Rock, June 10-11. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, June 11-12. Sec., Dr. O. L. Atkinson, 2528 Central Ave., Hot Springs National Park.

CALIFORNIA: *Written.* San Francisco, June 21-24; San Diego, Aug. 23-26; Sacramento, Oct. 18-21. *Oral.* San Francisco, June 19; San Diego, Aug. 21; Los Angeles, Nov. 20. *Oral and Clinical Examination for Foreign Medical School Graduates.* Sec., Dr. Louis E. Jones, 1020 N Street, Sacramento.

COLORADO:* *Examination.* Denver, June 8-9. Final date for filing applications is May 8. *Reciprocity.* Denver, April 13. Final date for filing applications was March 13. Exec. Sec., Mrs. Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Regular. Examination.* Hartford, July 13-14. Sec., Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, July 13-14. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, July 13-15. *Reciprocity.* Dover, July 22. Sec., Dr. J. S. McDaniel, 229 South State St., Dover.

DISTRICT OF COLUMBIA:* *Examination.* Washington, May 10-11. Deputy Director, Mr. Paul Foley, Department of Occupations and Professions, 1740 Massachusetts Ave., N.W., Washington, D. C.

FLORIDA:* *Examination.* Jacksonville, June 27-29. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami.

GEORGIA: *Examination and Reciprocity.* Atlanta and Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Director of Medical Services, Guam Memorial Hospital, Agana

IDAHO: *Examination and Endorsement.* Boise, June 12-14. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination and Reciprocity.* Chicago, April 6-8; June 22-24, and Oct. 5-7. Supt. of Registration, Mr. Fredric B. Selcke, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June 16-18. Exec. Sec., Miss Ruth V. Kirk, 538 K of P Bldg., Indianapolis.

IOWA:* *Examination.* Iowa City, June 14-16. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: *Examination and Reciprocity.* Kansas City, June 9-10. Sec., Dr. O. W. Davidson, 872 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 7-9. Address Mr. Raymond F. Dixon, Assistant Secretary, 620 S. 3rd St., Louisville 2.

MAINE: *Examination and Endorsement.* Augusta, July 13-14. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 15-18. Sec., Dr. E. H. Kloman, 1215 Cathedral St., Baltimore 1.

MASSACHUSETTS: *Examination.* Boston, July 13-16. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston.

MICHIGAN:* *Examination.* Detroit and Ann Arbor, June 1954. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing 8.

MINNESOTA:* *Examination.* Minneapolis, April 20-22. Sec., Dr. E. M. Jones, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Examination and Reciprocity.* Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson 113.

MONTANA: *Reciprocity.* Helena, April 5. *Examination.* Helena, April 6-7. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

NEBRASKA:* *Examination.* Omaha, June 1954. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEVADA:* *Examination and Endorsement.* Reno, July 6. Sec., Dr. George H. Ross, 112 North Curry St., Carson City.

NEW JERSEY: *Examination,* Trenton, June 15-18. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, April 12-13. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, New York, Syracuse and Buffalo, June 29-July 2. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany 7.

NORTH CAROLINA: *Examination.* Raleigh, June 21-24. *Endorsement.* Pinehurst, May 3; Raleigh, June 22. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

OHIO: *Examination.* Columbus, June 14-16. *Reciprocity.* Columbus, April 13. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA:* *Examination.* Oklahoma City, June 9-10. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Examination.* Portland, April 23. Final date for filing applications is March 22. Ex. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July 13-15. Acting Sec., Mrs. Margaret G. Steiner, Box 911, Harrisburg.

RHODE ISLAND:* *Examination.* Providence, April 1-2. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Reciprocity.* Myrtle Beach, May 11. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS: *Examination and Reciprocity.* Fort Worth, June 21-23. Rec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Ft. Worth 2.

UTAH: *Examination.* Salt Lake City, July 7-9. Final date for filing application is June 15. *Reciprocity.* Salt Lake City, June 15. Director, Mr. Frank E. Lees, Department of Business Regulation, 314 State Capitol, Salt Lake City.

VIRGINIA: *Examination and Reciprocity.* Richmond, June 16. Address: Virginia Board of Medical Examiners, 631 First St., S.W., Roanoke.

WEST VIRGINIA: *Reciprocity.* Charleston, April 19. Sec., Dr. N. H. Dyer, State Office Building, Charleston 5.

WISCONSIN:* *Reciprocity.* Madison, April 23. Sec., Dr. Thomas W. Tormey, Jr., State Office Building, Madison.

WYOMING: *Examination.* Cheyenne, June 14. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

VIRGIN ISLANDS: *Examination.* St. Thomas, June 9-10. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination.* Tucson, June 15. Sec., Mr. Herbert D. Rhodes, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, May 3-4. Sec., Mr. Louis E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, May 5-6. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

CONNECTICUT: *Examination.* New Haven, June 12. Address: State Board of Healing Arts, 258 Bradley St., New Haven 10.

FLORIDA: *Examination.* Gainesville, June. Sec., Mr. M. W. Emmel, University of Florida, Box 340, Gainesville.

IOWA: *Examination.* Des Moines, April 13. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MINNESOTA: *Examination.* Minneapolis, April 6-7; June 2-3. Sec., Dr. Raymond H. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, May 4-5. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln 9.

NEVADA: *Examination.* Reno, April 6. Sec., Dr. Donald G. Cooney, Box 9005, University Station, Reno.

NEW MEXICO: *Examination.* Santa Fe, July 18. Sec., Mrs. Marguerite Cantrell, P. O. Box 1522, Santa Fe.

OKLAHOMA: *Examination.* Oklahoma City, April 16-17. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, June 5, Sept. 11 and Dec. 4. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

RHODE ISLAND: *Examination.* Providence, May 12. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: *Examination.* June 11-12. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TEXAS: *Examination.* Austin, April 23-24. Sec., Brother Raphael Wilson, C.S.C., 407 Perry-Brooke Bldg., Austin.

WISCONSIN: *Examination.* Madison, April 3 and June 5. Final date for filing application is March 26 and May 28. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

*Basic Science Certificate required.

DEATHS

Thompson, Willard Owen ⊕ Chicago, clinical professor of medicine at the University of Illinois College of Medicine, died at the Henrotin Hospital March 23, aged 55, of cerebellar hemorrhage secondary to hypertensive cardiovascular disease. Dr. Thompson was born in Fredericton, New Brunswick, Canada, Feb. 17, 1899, and came to the United States in 1920. After graduation from Harvard Medical School, Boston, in 1923, he served an internship at the Boston City Hospital from 1923 to 1925. From 1926 to 1928 he was a fellow of the National Research Council. He was research fellow in medicine at his alma mater from 1925 to 1928, Henry P. Walcott fellow, 1928-1929, and in 1927 assistant in chemistry. In 1925 he was graduate assistant in medicine at the Massachusetts General Hospital in Boston, where from 1926 to 1929 he was research fellow in medicine and during the same period was in charge of the metabolism laboratory. Dr. Thompson came to Chicago in 1929 and joined the faculty of Rush Medical College as assistant clinical professor, serving in that capacity until 1935, when he became associate clinical professor. At the time of his death he was clinical professor of medicine at the University of Illinois College of Medicine, where he was associate professor of medicine from 1941 to 1943 and professor of medicine from 1943 to 1945. Dr. Thompson was a specialist certified by the American Board of Internal Medicine and was certified by the National Board of Medical Examiners. He was the current president of the American Geriatric Society, of which he was formerly vice-president. He served as president, secretary, and member of the legislative committee of the Chicago Medical Society, and as president, vice-president, and executive councilor of the American Goiter Association. In 1944-1945 he was vice-chairman of the Section on Medicine of the American Medical Association. For rendering unusual and distinguished service to the medical profession, the Mississippi Valley Medical Society, of which he was past president, trustee, and member of the executive committee, gave him its distinguished service award in 1952. He was a member of The Endocrine Society, of which he was formerly vice-president and member of the council, a member of the American Society for Study of Sterility, Society for Experimental Biology and Medicine, American Diabetes Association, Central Society for Clinical Research, Association of American Physicians, American Heart Association, American Therapeutic Society, of which he was a member of the council and formerly first vice-president, American Association for the Advancement of Science, World Medical Association, Society for Research in Child Development, American Association of the History of Medicine, American Society for Clinical Investigation, American Psychosomatic Society, Illinois State Academy of Science, Institute of Medicine of Chicago, Sigma Xi, Pi Kappa Epsilon, Chicago Society of Internal Medicine, Society of Medical History of Chicago, Chicago Association of Commerce and Industry, and a fellow of the American College of Physicians. Dr. Thompson was chairman of regional committee no. 14 of the Committee for Wartime Graduate Medical Meetings, and for his untiring efforts and devotion to this important program, the commanding general of the Sixth Service Command, in 1945, awarded him a certificate of distinguished service. From 1934 to 1940 he was research associate in pathology at Cook County Hospital, associate attending physician, Presbyterian Hospital, from 1930 to 1946, and since 1947 attending physician at Grant Hospital, the Henrotin Hospital, and (since 1945) the University of Illinois Research and Educational Hospitals. Dr. Thompson was editor of "American Lectures in Endocrinology," and the *Journal of the American Geriatrics Society*, formerly editor of the "Year Book of Endocrinology," and since 1946 managing editor of the *Journal of Clinical Endocrinology and Metabolism*. He was on the editorial board of the *Mississippi Valley Medical Journal*, *American Practitioner*, and *GP* and contributed numerous scientific articles to medical publications and textbooks.

⊕ Indicates Member of the American Medical Association.

Allen, Jason Roy, Sandy Creek, N. Y.; Syracuse University College of Medicine, 1901; first superintendent of the Oswego County Sanitarium in Richland; died Dec. 19, aged 77, of arteriosclerosis.

Bassow, George Joseph ⊕ Athol, Mass.; Baltimore University School of Medicine, 1899; died in Gardner Jan. 16, aged 76, of thrombosis of the superior mesenteric artery.

Bodnar, Joseph Aloysius ⊕ Cleveland; Western Reserve University School of Medicine, Cleveland, 1926; died Jan. 7, aged 58.

Brandenstein, Siegmund ⊕ New York City; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Germany, 1904; died Jan. 19, aged 73, of cancer.

Cameron, Virgil Leroi ⊕ Los Angeles; University of Oregon Medical School, Portland, 1927; served during World War II; died Jan. 1, aged 52, of coronary thrombosis and arteriosclerosis.

Campbell, Oren C., Fort Lauderdale, Fla.; Medico-Chirurgical College of Philadelphia, 1904; died in Broward General Hospital Dec. 23, aged 75, of injuries received when struck by an automobile.

Carr, Emanuel Frederic ⊕ Stapleton, Neb.; Bennett Medical College, Chicago, 1906; for many years county judge; served on the town board and the school board; on the staff of the St. Mary Hospital in North Platte, where he died Jan. 29, aged 72, of uremia.

DeRosier, Joseph Laudium, Detroit; Baltimore Medical College, 1911; died Dec. 1, aged 66, of cerebral hemorrhage with left hemiplegia.

Dwinell, George Francis ⊕ Manchester, N. H.; Harvard Medical School, Boston, 1915; member of the New England Surgical Society; fellow of the American College of Surgeons; affiliated with Alexander-Eastman Hospital in East Derry; chief surgeon, Elliot Hospital; died Jan. 4, aged 64, of chronic myocarditis.

Edds, Otis P., Rupert, W. Va.; Kentucky School of Medicine, Louisville, 1907; died in Memorial Hospital, Charleston, Feb. 14, aged 72, of peritonitis.

English, Alvin Quincy ⊕ Palmetto, Fla.; Atlanta College of Physicians and Surgeons, 1912; died in Bradenton Dec. 4, aged 72, of injuries received in an automobile accident.

Fink, A. Elston ⊕ East Orange, N. J.; University and Bellevue Hospital Medical College, New York, 1908; affiliated with Hospital for Crippled Children and the Beth Israel Hospital in Newark, where he died Feb. 1, aged 72, of coronary occlusion.

Gardner, E. Roy ⊕ Pittsburgh; University of Pennsylvania Department of Medicine, Philadelphia, 1895; staff member emeritus of Passavant Hospital; died Feb. 6, aged 79, of carcinoma of the stomach.

Glaser, Walter Thomas, Richmond Hill, N. Y.; Long Island College Hospital, Brooklyn, 1932; served on the staff of the Queens General Hospital in Jamaica and the Lutheran Hospital in New York; died Feb. 8, aged 46, of a heart attack.

Hash, Evaline St. Croix ⊕ Chicago; Chicago Homeopathic Medical College, 1902; an Associate Fellow of the American Medical Association; died in Henrotin Hospital Feb. 11, aged 81, of cerebral thrombosis and cirrhosis of the liver.

Kent, John Anson ⊕ Mulberry, Ind.; Illinois Medical College, Chicago, 1902; an Associate Fellow of the American Medical Association; on the staff of the Clinton County Hospital in Frankfort; died in the Colonial Hospital in Rochester, Minn., Dec. 1, aged 80, of chronic pyelonephritis with uremia.

McCain, William R., High Point, N. C.; University of Maryland School of Medicine, Baltimore, 1897; on the staff of High Point Memorial Hospital, where he died Jan. 10, aged 79, of cerebral thrombosis and chronic cystitis.

FOREIGN LETTERS

BRAZIL

Generalized Histoplasmosis and Hodgkin's Disease.—The first case of histoplasmosis described in Brazil was reported in 1941 by Villela and Pará, and seven subsequent cases were reported between 1941 and 1946 by Almeida, Lacaz, Duarte, and Pará. Now, Drs. G. del Negro, R. Veronesi, and M. A. Figueiredo, of the São Paulo State University, presented the ninth case of the disease, which is also the first report in the Brazilian literature (*Revista paulista de medicina* **43**:291, 1953) of an association of histoplasmosis and Hodgkin's disease. The clinical findings were those of a chronic infectious disease with an insidious and debilitating course. Many laboratory examinations were performed without any important positive result, except that a seroagglutination test for brucellosis was positive (Brucella abortus 1:200, Br. suis 1:200, and Br. melitensis 1:100), but all the blood cultures and the Castañeda test were negative. Because high titers of Brucella agglutination may be present in Hodgkin's disease, the authors suspected its presence a short time before the death of the patient. The autopsy proved undoubtedly that he had died as a consequence of the association of generalized histoplasmosis and Hodgkin's disease.

The authors discuss the difficulties of the differential diagnosis between an infection by Histoplasma capsulatum on one hand and Leishmania, certain forms of Paracoccidioides brasiliensis, and the toxoplasma on the other. Cultures of the fungus, obtained through a biopsy specimen, blood, or postmortem material, whenever there is a possibility of histoplasmosis, are recommended. In the problem of the association between histoplasmosis and the malignant lymphomas, particularly Hodgkin's disease, the authors believe that there is more than a mere coincidence when the two illnesses affect the same patient.

Amputation for Advanced Peripheral Vascular Disease.—Drs. O. M. Toledo, L. P. Leao, and J. B. Neto of the department of surgery, São Paulo State University, reported (*Revista paulista de medicina* **43**:330, 1953) a series of amputations for advanced peripheral arterial obliterative disease. In spite of the growing interest presented by this affection and the new methods of treatment, the disease continues, although in lesser degree, to be the cause of gangrene of the extremities due to the progressive and in many cases uncontrollable course of the disease. Confronted by the necessity of amputation, the surgeons have not paid enough attention to certain factors that strongly influence healing and mortality. The series studied included 89 patients, 17 of whom had obliterative thromboangiitis and 72 of whom had arteriosclerosis (two with diabetes). The age of the patients varied between 28 and 90 years, 44 of them belonging to the age group 51 to 70 years. All the amputations were performed because of gangrene. The authors classified the results as "good" if healing occurred regardless of the time required and "bad" if gangrene, infection, or an unserviceable stump needing reamputation occurred. There were 58 good results, 12 bad results, and 19 deaths. All deaths occurred in patients with arteriosclerosis, thus emphasizing the greater surgical risk with such patients. Although 6 deaths occurred in patients between 28 and 60 years of age, 13 deaths occurred in patients of more than 60 years. The extent of the gangrene on admission greatly influenced the results. There were 34 good results in patients whose gangrene involved the toes or the foot compared with only 10 good results in those whose gangrene reached the leg. The higher the level of arterial obstruction the fewer the good results.

Congenital Filariasis.—Drs. H. A. Neves and L. M. Scaff of the National Service of Malaria, in 1952, reported finding filariasis due to Wuchereria bancrofti in three infants 3, 10, and 90 days old, respectively. Because several months normally elapse between the infecting mosquito bite and the appearance of the microfilarias in the bloodstream, the occurrence of the parasite in the newborn infants strongly suggested congenital infestation. To clarify this point, in 1953, the authors carried out a systematic search for microfilarias in placental blood and in the blood of the umbilical cord, the results of which will be soon published in *Revista brasileira de malariologia*. The examination of specimens from 436 mothers disclosed the presence of microfilarias of W. bancrofti in 14 samples of placental blood, or 3.2%, and in 3 samples of blood of the umbilical cord, or 0.7%. In two cases the microfilarias were found in both the placental and the umbilical blood. All the positive specimens were from women delivered during the night (between 10:30 p. m. and 7:30 a. m.), which is the period in which the density of microfilarias in the blood is highest.

Lipoma of the Uterus.—Lipomas, isolated or multiple, are relatively frequent in the subcutaneous connective tissue, in which they tend to grow easily. Other and rarer localizations have been observed, but lipomas of the uterus are exceptional, because of the meagerness of its fatty tissue. In 1951, Dontenvill of Germany, reporting a case of lipofibromyoma of the uterus, reviewed the world medical literature and found only 44 cases of various kinds of lipomas of the uterus. Recently, Dr. C. O. Degrazia reported in *Medicina e cirurgia* (**25**:115, 1953) in a white patient 60 years of age the 46th case of lipoma of the uterus. The tumor was a paracervical yellow mass about 4 cm. (1.6 in.) in diameter and consisted of normal fatty cells, without fibrous or muscular tissues as in Dontenvill's case.

ENGLAND

Eighteen-Year-Old Youths in a London Suburb.—Logan and Goldberg have published a study of 85 18-year-old boys in a suburb of London (*Brit. J. Soc.* **4**:323, 1953). Nine were full-time students, 20 were trainees for executive and managerial posts, 33 were apprentices for trades with some prospects of promotion, 12 were semiskilled workers without prospect of acquiring skill or promotion (e. g., machine minders), and 11 were unskilled workers. The social class of the father and the boy's schooling both influenced the boy's career. Thus, in the 14 families in the professional classes, 10 sons were aiming at the same occupational level as their fathers and none were in a semiskilled or unskilled job. Similarly, only 2 of the 11 youths from families of semiskilled workers and none of the sons of unskilled workers were apprenticed to a trade. The influence of education is shown by the fact that all but one of the 23 semiskilled and unskilled workers had attended elementary schools only until the age of 14, and all but 2 of those who had remained in school till age 17 became civil servants, clerks, or trainee-executives in industry or were going on to the university.

In choosing a job there was often identification with a successful family tradition, e. g., 32 boys followed in the steps of a father, uncle, brother, or grandfather. Overt guidance or pressure from the father was seldom reported. When it was given, it was often advice against following his own trade, e. g., all six fathers who were engine drivers had urged their sons not to join the railway but to seek a skilled job elsewhere. In 10 families where the father appeared to be timid and dependent, the mother had assumed the dominant role and was keen for her son to climb in the world but not at the cost of security. There was some evidence that unhappy family relationships were reflected in the boy's choice of a job. A group that seemed to be reacting against a disturbed family situation were the drifters found working in the semiskilled and unskilled jobs. One youth with delinquent tendencies had had 30 jobs since leaving school. Ten of the boys wanted to become truck drivers, the following reasons being given: "out in the open air," "plenty of change," and "in charge of a machine." Seven were from broken homes, and other reasons may have motivated the desire to be away from the stress of authority and the need to fit into a group.

The items in these letters are contributed by regular correspondents in the various foreign countries.

The answers to the questions of the meaning of work to these young men and how they felt about their jobs are best summarized in the words of the report: "To the labourers and machine minders the job seemed to be a place to clock on and clock off each day, and collect a wage packet at the end of the week. . . . The shop assistants and routine clerks showed an unexpected degree of active dissatisfaction with their work, and a particular restlessness. . . . The main stream of youths learning skilled trades showed greater interest and personal involvement in the job. . . . The 'elite' apprentices, e. g., draughtsmen, were deeply involved in their work which spread considerably into their leisure time."

"The lack of creative leisure pursuits of these lads is striking—though by no means peculiar to this age-group or to this country. . . . There were very few signs of any awakening interest in wider civic or community activities." A surprising finding was the appreciation of music of all kinds, and this was seldom related to dancing or other interpersonal relationships. With the exception of the students, reading seldom extended beyond the daily newspaper. "Although late adolescence and early adulthood are usually considered to be phases of adventure and experiment," the weekend and holiday programs of these lads showed "a conspicuous absence of such characteristics."

In view of the widespread interest aroused by the Kinsey reports, the section of the report dealing with sexual behavior is best summarized by extensive quotations: "A large number were eager to discuss how to achieve a relationship in which their future wives, whom they wanted to be good-looking and active, would be their partners and share interests and money. This conception of marriage as an equal partnership was often considered by the young men to differ from the relationship between their own parents, which appeared to them as one of bread-winner and housekeeper, each pursuing their own interests. This attitude of mutual sharing was also expressed in their attitudes to sexual behavior, which most of them regarded as a co-operative enterprise, be it at the level of petting, premarital or marital intercourse. The majority did not acknowledge the older sanctions of formal engagement and marriage, which may have previously restricted sexual expression. In actual fact, almost all the youths said they approved of premarital intercourse with a 'steady' girl friend, though not with a casual acquaintance, provided 'both partners felt the same.' A common inconsistency was that most said they wanted their wives to be virgins, and were uncertain whether the sexual code to which they subscribed should apply also to their sisters. This confusion may illustrate a 'cultural lag' between the newly acquired mores of the young men, and the conventions of sexual behaviour which had been handed down to them by the previous generation. There does seem to be evidence, however, that these young men were reaching towards a freer and less guilt-ridden expression of heterosexual relationships, and this may become an important factor in mental health. In keeping with this suggestion, the young men discussed masturbation freely, and it was rare to find false beliefs on its effects; again there seemed to be little conscious guilt.

"Sexual activity, as expected, was related to the stage of physical and social development, which varied remarkably. Regarded merely in terms of physical 'outlets,' 15 of the 74 could be regarded as approaching 'adulthood,' i. e. having heterosexual voluntary seminal emissions with or without coitus, their rate of masturbation having fallen; 43 were 'adolescent,' i. e. masturbating frequently, and without heterosexual emissions; 20 may be considered 'children' as no history was obtained of any emissions. . . . There was a wide scatter among the job levels, the only point of interest being that none of the students reported 'adult' outlets. It is difficult for technical reasons to compare these observations with Kinsey's and with the range of behaviour reported by him, but it is correct enough to say that the young men as a group appear to be somewhat retarded compared with Kinsey's Americans."

The physical health of the 74 young men who were examined was "remarkably good." None were verminous. Less than half smoked, and none over 40 cigarettes a week. Only about half took an occasional glass of beer. The only postural or developmental defects were two cases of minor flatfeet and one of clubfoot. Only four cases of major disease were found; these were postprimary tuberculosis and postsanatorium arrest maintained, bronchiectasis, chronic bronchitis, and severe goiter with mild thyrotoxicosis. Numerous minor defects were found: acne, dental carries, nasal catarrh, chronic sinusitis, boils, and deafness from wax or chronic otitis media. The prevalence of these defects was related to social class: "Not one of the unskilled workers was free from a noticeable defect. . . . The frequency of stress dyspepsia is remarkable [14 cases]. The stomach powder taken by these youths to relieve their gnawing pains usually belonged to their fathers who themselves suffered in such cases from chronic dyspepsia." From the point of view of mental health, the lads were divided into three categories: 43 gave the impression of being stable and well-adjusted, 12 were clearly disturbed, and 19 were maladjusted in some respects. Many of the seriously disturbed youngsters were found among the semiskilled and unskilled workers. In most of the 12 cases of severe emotional disorder, there was evidence of disturbed family relationships. The third group consisted of "19 youths at all job levels who had mild emotional symptoms such as headaches, dyspepsia under stress, lack of energy, tiredness, excessive sweating, and general unsettledness. The amount of dyspepsia found at so young an age was surprising."

In reviewing these findings in physical and mental health, attention is drawn to the fact that all the subjects had passed through multiple school and/or industrial medical examinations. "The usefulness of the routine examinations is called even more into question by the fact that none of the 4 youngsters with a major disorder had been advised on the choice of a suitable job. It seems that more enlightened medical advice at school or in the factory might be more profitably concentrated on the few cases of chronic illness rather than be spent on the routine inspections of the mass of healthy youths. More of the 12 youths who were found to have severe emotional disturbances were either under regular medical care or had received guidance in their choice of job."

Official Morbidity Study.—In 1949 a survey of sickness was carried out, based on interviews with 40,340 men and 49,622 women, each of whom reported a month's sickness experience. An analysis of the findings has just been published as a supplement to the Registrar General's Statistical Review of England and Wales. The number of illnesses and injuries per 100 persons interviewed was greater for women than for men; 1.4 times as great at ages 16 to 64 and 1.3 times at ages 65 and over. Whereas in the older group the women reported more days of incapacity (192:164 per 100 interviewed), at ages 16 to 64 they had less than men (92:95). In the lower age groups women consulted a doctor oftener than men (46:38 per 100 interviewed), but from 65 onward there was little difference between the sexes (66:67). For those who were employed the percentage of women with four or more ailments per month was double that of men. The proportion aged 16 to 64 who reported a week or more of incapacity in the month was 5% for men and 5.1% for women. There were great regional and occupational differences. Thus, on the average there were 167 sicknesses (including comparatively minor ailments) reported per month for every 100 persons interviewed in the northern region, compared with 136 sicknesses for every 100 persons interviewed in the southern region. Farmers reported 97 sicknesses per month for every 100 interviewed, compared with 131 sicknesses for miners.

Of all the persons interviewed, 0.5% stated that they had spent some time in a hospital during the month in question. For those who had been in a hospital, the average length of stay was about two weeks for men of all ages and slightly less for women, although more women than men had been in a hospital. The greatest difference was in the age group 16 to 64. For persons aged 65 and over more men than women spent some time in hospital. Elderly persons who were in a hospital spent on the average half as long again there as persons aged 16 to 64 (between two and three weeks, as compared with under two weeks). On the average, 5% of persons interviewed spent some time in bed during any month, women showing a higher proportion than men. For those who were ill enough to stay in bed, the average time spent there was 7 days for all ages and 10 days for persons aged 65 and over.

FRANCE

Congress of French Society of Ophthalmology.—Under the presidency of Dr. A. B. Reese of New York, the 60th Congress of the French Society of Ophthalmology was held in June, 1953. The congress had an international character because of the large number of foreign participants. In discussing glioma of the retina, Dr. A. Dollfus stressed that this tumor occurs early in life (62% are observed in children under 3 years of age) and that 21% of these patients have the tumor in both eyes. The frequency of the tumor in the yellow race is four times that in the white, which in turn is four times that in the black race. The author considers the frequency of bilateral tumors an evidence of congenital origin rather than of metastasis. Tumors diagnosed as pseudoglioma should be enucleated, because 80% of these were discovered after enucleation to be true gliomas. In any case x-ray therapy is required for a cure. Dr. Reese reported that by roentgen therapy 11.5% of his patients were cured. To reduce the x-ray dose he gives tablets of triethylenemelamine instead of β,β'-dichloroethyl sulfide along with the roentgen therapy.

Dr. Stallard of London reported cures in 20% of these patients by using radon seeds. With a special scleral applicator containing the radioactive substance, efficient radiation may be limited to the tumor area. Dr. Mercier advised the use of one exposure of beta rays per week to prevent retinopathy in premature infants. Dr. Mawas suggested that "tumor of the retina" more precisely describes the lesion than glioma. Dr. Franceschetti considered glioma to be due to a mutation of a gene and therefore hereditary.

In preliminary studies, Dr. P. L. Law of London has tried to determine whether there is a constant relation between facial asymmetry and (1) cranial alterations, (2) ametropia, and (3) strabismus. Dr. V. Cavka of Sarajevo, Yugoslavia, found electroencephalographic evidence of cerebral pathological alterations in 90% of his patients with retinitis pigmentosa. Drs. Hoffman and Klumkens of Gent observed an angiographic syndrome characteristic of suprasellar tumors, by means of anterior and lateral arteriograms. Drs. Toulonst and Larmande of Algeria pointed out that conjunctivitis due to Hemophilus influenzae accounts for about 60% of the cases of blindness in North Africa. H. influenzae also aggravates trachoma. Infection with H. influenzae is quickly cured by the use of chloramine, streptomycin, and strong silver protein, but the treatment should be prolonged in order to avoid the development of chronic conjunctivitis.

Drs. Offret and Saraux of Paris have emphasized the importance of puncture of the anterior chamber and of bacteriological examination of the aqueous humor in order to establish the etiological diagnosis in patients with keratoconjunctivitis and uveitis. Dr. Dejean of Montpellier reported animal experiments dealing with tuberculous conditions of the eye that are considered atypical due to the scarcity of the Koch bacillus in the tissues. Intraocular inoculation of rabbits with a paucibacillary culture has produced lesions of chorioretinitis comparable to those noted in man, but the infection in the rabbit has quickly spread to the anterior segment in which it has produced some severe lesions of sclerokeratitis, sclerectasia, and anterior staphylomas resembling those of malignant tuberculous sclerokeratitis in man.

Dr. A. Zwiauer of Salzburg stressed the importance of the capillary permeability examination (Landis method) in patients with iritis and iridocyclitis, in whom the rate is about 0.83% in contrast to a normal rate of 0.3%. This is a sign of a general inflammation. Dr. Sedan of Marseilles has studied corneal sensation in patients with spring keratitis by means of keratoesthesiograms, of which three were of patients who also had trachoma. The action of cortisone was shown by the recovery of corneal sensation. Drs. Renard, Lelièvre, and Marcel of Paris reported the ineffectiveness of cortisone in a patient with scleromalacia perforans. Drs. J. Mawas and A. D. Herschberg of Paris treated recurring retinal hemorrhages in 12 adolescents by subcutaneous implantations of testosterone, which stopped the hemorrhages in 9 patients. The follow-up periods ranged from 8 to 19 months. Humoral studies of these young men revealed an imbalance between androgens and estrogens in favor of the estrogens. The authors believe that the mechanism of these hemorrhages lies in the relationship between the estrogens and physiological vasodilatating substances. Drs. Moacyr and Alvas of São Paulo reported the results of surgical treatment of pterygium. They treat cases of rare relapse by beta rays of radium. Dr. L. Pan Fique of Lyons reported his method of treating the endoepithelial "dystrophy of Fuchs," which has, in general, resisted all medical and surgical methods of treatment. With the help of a curet he removes most of the epithelium and of the membrane of Descemet. The corneal edema disappears during the months following the operation. He then performs a perforating graft. In his hands the results are excellent. Dr. A. Busaccas of São Paulo showed micrograms of a posterior displacement of the vitreous humor showing that the residues of pigments on the posterior surface of the cornea consist in part of pigmented histiocytes that have emigrated from the ciliary body to the endothelioparenchymatous layer of the cornea. By means of a biomicroscope and selective staining, Drs. Nataf and P. Delon of Tunisia have identified two lymph ducts of the conjunctiva not described hitherto: a descending pericorneal temporal collector emptying into the collectors of the external angle and a recurrent supernasal duct running to the internal angle.

NORWAY

Iatrogenic Heart Disorders.—The publication in 1953 by Dr. H. B. Weinberg of a study of iatrogenic heart disorders has led to further publications about it. Iatrogenic disorders are not limited to the heart, and it has lately been suggested that they are so common and so serious that the value of systematic annual medical examinations of healthy persons is questionable as they are so liable to start iatrogenic disease. Dr. O. Jervell, who is in charge of Diakonissehusets Hospital in Oslo, has pointed out that the periodic medical examination should have as its chief objective freedom from fear of disease and not just the reverse. A member of his staff, Dr. G. Grytting, has published in *Nordisk medicin* for Jan. 14, 1954, a detailed account of two women who had run the gauntlet of medical examinations with disastrous results. One of them had suffered during pregnancy from severe anemia associated with what her doctor misdiagnosed as valvular heart disease. Persistent nervous "heart attacks" ensued, and four years later they had become refractory to treatment. The other patient was a 59-year-old woman, who, requiring a medical certificate, underwent a general medical examination with the unfortunate discovery of hypertension. Thereupon she had dizziness, headache, feverish attacks, severe functional heart attacks, and a respiratory neurosis. It is all very well to advise young doctors to be silent about the cardiac murmurs and other signs they may find of heart disease, but when the next doctor consulted talks openly about them, the patient's reflexions on her first doctor may not be complimentary.

Peptic Ulcer.—In the Far North of Norway, in a district populated by fishermen and small landowners, Dr. A. Haakenaasen, who is attached to the Sandnessjöen Hospital, has undertaken a follow-up study of the 352 patients who underwent medical or surgical treatment for peptic ulcer in this hospital in the period 1943 to 1952. The follow-up was effected by questionnaires, which were answered by 89.5% of the patients. In this 10-year period 35% of the patients with duodenal ulcer and 40% of those with gastric ulcer were operated on (Polya's gastric resection). Most of the patients given medical treatment for gastric ulcer were between the ages of 30 and 50 and most of those given medical treatment for duodenal ulcer were between the ages of 20 and 40. Most of the patients operated on for gastric ulcer were between the ages of 40 and 60 and for duodenal ulcer between the ages of 30 and 50. Hyperacidity of the gastric juice was found in 55.5%. The follow-up examination showed that medical treatment of gastric ulcers had resulted in complete cure for 57.5%, and that 12% were almost cured. The corresponding figures for duodenal ulcer were 53.6% and 13%. Operative treatment of the gastric ulcers had resulted in a cure in 77.6%, and 13.4% were almost cured. The operative treatment of the duodenal ulcers resulted in a cure in 81.6%, and 7.9% were almost cured. Dr. Haakenaasen concluded that it would perhaps in the future be wiser to operate more and rely less on the dietetic medical treatment of peptic ulcer.

CORRESPONDENCE

INTERNS AND RESIDENTS IN SERVICE

To the Editor:—It has been recommended by the Health Resources Advisory Committee, Office of Defense Mobilization, to the Selective Service System that after July 1, 1955, "all those physicians with obligations for military service obtain commissions during their internships and that the Department of Defense then request delay in call to active duty for those for whom they recommend additional training." The Selective Service System will give consideration to such a plan and will cooperate in recommending to its local boards concerning the advisability of deferment in such individual cases. We hope that this, together with the "Matching Plan" being formulated by this office in conjunction with Selective Service System, will provide a plan whereby our present postgraduate educational standards will be upheld and civilian hospitals as well as the three military services will gain added benefits and protection.

To replace those officers who have completed their obligatory service and who are being released from the services, it seems probable that for the year July 1, 1954, to June 30, 1955, it will be necessary to call all residents and physicians who have completed one year of internship who are in priority 1 or 2, as well as those in priority 3 who have a dual liability for military duty. There is a certain backlog, particularly during the first half of the year, of men from the intern group of 1953 who have not been called, together with a small number of the priority 1 and 2 groups. In justice to the group of interns finishing this year, we trust that the hospitals throughout the country will extend their capabilities to handle this group on a short-term basis. The three services are trying to estimate their needs, and it is possible that they may be able to furnish an approximate time schedule. Vacancies in the Navy and Air Force will outnumber those in the Army, at least from July to December. All men finishing internships in June and students graduating from dental schools, who desire service with the Navy or Air Force, should apply for commissions so that processing may be effected and so that they may be ordered to active duty without delay. Dental students graduating this year should obtain a statement from their respective deans indicating that they will graduate in 1954. This statement should accompany application for commission. Other data on physicians in the service will be found on page 1207 of this issue.

For those for whom a delay in call will be inevitable, we should like to request that the hospitals of this country make a special effort to place them on a temporary basis so that these young men may have a means of livelihood and also the opportunity to continue their education, as well as to contribute to the needs of the hospitals of this nation.

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PAID BLOOD DONORS

To the Editor:—Dr. Scannell's letter on page 439 of the Jan. 30, 1954, issue of THE JOURNAL, condemning the use of paid donors indicts reputable blood banks in New York state and the physicians on their staffs. Yet, I do not know of a single instance of a fatal reaction or transmission of disease that can be attributed directly to negligence in selecting a professional donor. To demonstrate the care with which donors are selected, I reported the statistics of the Blood Transfusion Association for the year 1952 (*J. A. M. A.* **151:**1430 [April 18] 1953). In 1953, the report shows that, of 29,693 donors screened, 12,202 were rejected at the admitting desk on the basis of medical history and 890 more were rejected by the examining physicians.

It would be fortunate indeed if it were possible to exclude in particular the carriers of malaria and hepatitis by this otherwise satisfactory screening. We have, for the past two years, carried on intensive research on the problem of carriers, as have a number of workers in other centers, but thus far no one has found an answer. That some donors will knowingly or unwittingly tell a lie or withhold information cannot be denied. But as to temptation to do so, is not the volunteer donor, who replaces blood for a friend or relative, thereby canceling a charge of $35, just as apt to conceal the truth or be ignorant of pertinent details in his history as the donor who receives a much smaller fee? Perhaps that explains the decidedly greater incidence of hepatitis in military practice, where blood is supplied by volunteers almost exclusively.

As to the selection of donors, there are in existence two official and most efficient public health agencies, the National Institutes of Health and the Department of Health in New York City. All blood banks in this city are licensed by the Department of Health, and, furthermore, the particular banks appearing to be indicted in Dr. Scannell's letter are licensed by the National Institutes of Health.

In the letter to which I have referred, there is cited a resolution passed by the House of Delegates of the Medical Society of the State of New York in 1952. There should be mentioned also the report of the reference committee on two resolutions introduced at the 1953 session. The details of these resolutions and the action of the House of Delegates will be found in the *New York State Journal of Medicine*, Sept. 1, 1953, part 2, page 116. In essence, the committee recommended "1. This matter be referred to the Council for Study; 2. And further until such time as the Council shall act on this problem, that each county be permitted to collect blood under its present acceptable system, so that in no way shall the adequate procurement of blood be jeopardized by any change."

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GENITAL WARTS: A VENEREAL DISEASE?

To the Editor:—A recent article (*J. A. M. A.* **154:**333 [Jan. 23] 1954) reported on 70 men and 24 women with genital warts. Of the women, who were wives of returnees from the Far East, nine were pregnant and two were four to six weeks post partum. Because the transmissions were probably by sexual intercourse, genital warts were classified as a venereal disease. Transmissibility of all kinds of warts by contact is an established fact, but why should genital warts be classified as venereal? To poll dermatological opinion on this point, I sent out 336 questionnaires to dermatosyphilologists in the United States, Canada, the Philippines, Cuba, and Puerto Rico in which I asked: 1. Do you believe it is correct to consider condyloma acuminatum a venereal disease? 2. Do you approve the use of the term "venereal wart" as a synonym of condyloma acuminatum?

Of the questionnaires sent out, 284 were returned. No to both questions was the answer in 266, and yes to both questions was the answer in 3. Six persons answered yes to question 1, and no to question 2. Three answered no to question 1 and yes to question 2. Here are excerpts from some of the replies.

"I was called to see a child who had acuminated verrucas, and, without thinking and in the presence of the child's grandmother, I casually said: 'It is just venereal warts.' I am convinced that, as a result of using that word, a divorce ensued. I wish you luck in your crusade." "The word venereal carries with it a definite stigmatization which is usually a severe psychic trauma to the patient." "Acuminate warts are not uncommon in infants. These certainly would not be venereal warts." "Condyloma acuminatum should not be considered a venereal disease any more than scabies or pediculosis pubis, either of which may also be occasionally transmitted by sexual contact. Venereal warts is

a term that should never be used." "I see no difference between the etiology of verruca of the hands and verruca on the genitals." "All of us have seen condyloma acuminatum in axillas, under breasts, under a pendulous abdomen, and the anal area. Certainly these cannot be considered venereal." "A colloquial term should not be put in the title of a scientific paper."

Let us hope that the term will become a historical one. This will improve medical writing and will encourage medical students, interns, and physicians to avoid its use in hospital records, insurance reports, and medical certificates in general.

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USE OF THE METRIC SYSTEM

To the Editor:—While supporting Capt. Julian Love's plea for general use of the metric system, I think he is not strictly correct in one point in his letter (*J. A. M. A.* **154:**263 [Jan. 16] 1954). He complains that results of blood chemistry studies are recorded in milligrams per 100 ml., but the leukocyte count is reported in thousands per cubic milliliter rather than microliter. It is still correct, however, to express blood cell counts in this way, because the volume of fluid in the counting chamber is one based essentially on a linear measurement. It is, in fact, strictly a cubic millimeter, or a part thereof. It is not the millionth part of a liter because the liter is now a measure of volume based on an arbitrary standard divorced from the meter. It is true that the idea of the French government was to have measures of length, volume, and mass based on a natural invariable standard—the meter or the 10 millionth part of the polar quadrant of the earth passing through Paris. A study of the subsequent history of this proposal, however, will make it clear why volumes based on a linear measurement (the cubic millimeter) and those on volumes not so based (the milliliter) are not strictly interchangeable, though for all practical purposes they are the same.

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DOCTORS IN SERVICE

To the Editor:—At the recent meeting in Chicago of the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association, I presented a plan under consideration to take effect June 30, 1955, at the expiration of the "Doctor-Draft" law, P. L. 84, 83rd Congress, and based on the assumption that the law could not be continued but that after July 1, 1955, all physicians would come under the regular draft as regular registrants. The plan presented was based on the matching plan for internships that has met with success over the past three years. A letter was sent to the deans of the various medical schools in the first week in January, asking for a test run among the nonveteran, fourth year students, the regular registrant group. The questions asked of each student were: 1. If given a free choice, which service do you prefer? 2. Do you prefer your service immediately following internship, after internship plus one year of hospital training, or after full residency training?

It was pointed out that various factors might enter into the decision. Some of these were finances, loans, marital status, desire to obtain training either before or after military service, and the simple desire to get this service over as soon as possible. The replies indicated that 27% preferred the Army, 37% the Navy, and 36% the Air Force. As to training, 39% preferred it immediately after internship, 15% after two years of hospital training, and 46% after full residency training.

Following presentation of these results at the Chicago meeting, inquiries were made as to whether or not it would be possible to put this plan into effect with respect to members of the 1954 graduating classes who will finish their internship on June 30, 1955. The plan had previously been explained to the Health Resources Advisory Committee, Office of Defense Mobilization (Rusk Committee), and to General Hershey and Selective Service. Both groups and General Hershey expressed equal interest in it; therefore, after a conference with Col. Richard Eanes, in charge of the Medical Section of Selective Service, and our own staff, it was decided to attempt to place the plan in operation this spring. The proper cards have been printed, and during April, 1954, these will be distributed to the medical and dental schools for completion by each fourth year student. Obviously, it is very much in the interest of each student to fill out a card. Otherwise, it seems to us that it must be assumed that those students who do no cooperate in this matter are not interested in when they receive their service or in which branch. Like any plan, its success depends on the cooperation of all involved: in this instance the students themselves, the medical and dental schools, Selective Service, and the Department of Defense.

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Washington 25, D. C.

ELI LILLY MEDICAL RESEARCH FELLOWSHIP FOR SOUTH AFRICA

To the Editor:—I wish to draw the attention of medical practitioners registered in South Africa, who may at present be in the United States, to the fact that applications may be submitted for the 1954 award of the Eli Lilly medical research fellowship for South Africa. The value of the fellowship is $250 a month for 12 months, plus return traveling expenses to the point of study in the United States. I will be glad to supply further details to anyone interested. The closing date for applications is June 15, 1954.

H. A. Shapiro, M.D.
Honorary Chairman, Selection Committee
Eli Lilly Medical Research Fellowship
(South Africa)
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GESELL INSTITUTE OF CHILD DEVELOPMENT

To the Editor:—Among the articles appearing in a syndicated newspaper column called "Child Behavior" and coming from the Gesell Institute of Child Development is a series regarding the treatment of myopia by exercises. It might seem obvious that the published articles do not represent the views of the Section of Ophthalmology of Yale University School of Medicine, but because the Gesell Institute is located in New Haven, Conn., we have been receiving from colleagues, even within the state of Connecticut, inquiries as to why we permitted such articles to come from Yale University. I wish to call attention to the fact that the Gesell Institute is a private organization, with no connection with Yale University, and that the Yale University School of Medicine has no control over, and does not necessarily sanction, any article coming from this Institute.

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THE FAMILY PHYSICIAN AND HEART DISEASE

To the Editor:—I am writing concerning my article "The Family Physician and Heart Disease" in The Journal, Nov. 7, 1953. I wish to state that some of the material used in the first part of my paper was taken from a paper presented to the Florida State Medical Association in April, 1953, by Dr. Sidney Davidson of Lake Worth, Fla. Dr. Davidson's paper was later published in the January, 1954, issue of the *Journal of the Florida Medical Association.* It is my wish to give Dr. Davidson due credit for the material that I used from this paper.

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COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The following nine papers were read at the 50th Annual Congress on Medical Education and Licensure, Chicago, Feb. 7-9, 1954.

FIFTY YEARS OF COUNCIL ACTIVITY

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There are periods in the lives of men and institutions that are traditionally recognized as justifying some form of celebration or special attention. The fact that this is the 50th anniversary of the Council on Medical Education and Hospitals of the American Medical Association, as well as the 50th Annual Congress on Medical Education and Licensure, merits some reference to its history and accomplishments. A comprehensive and detailed history of the Council by Dr. Victor Johnson was included in the "History of the American Medical Association: 1847-1947" published in 1947 as a feature of the centennial celebration of the Association. In making references to certain aspects of this history, I have quoted freely from Dr. Johnson's history of the Council.

That the primary objective in the establishment of the American Medical Association was the improvement of medical education is shown in the preamble of the resolution adopted by the New York State Medical Society in 1845, calling for a national convention that culminated in the formation of the Association in 1847. The preamble read as follows:

"Whereas, It is believed that a national convention would be conducive to the elevation of the standard of medical education in the United States; and

"Whereas, There is no mode of accomplishing so desirable an object without concert of action on the part of medical colleges, societies and institutions of all of the states."

This makes perfectly clear the basis for the interest and responsibility that the American Medical Association has from its very inception assumed in the field of medical education. For more than 50 years after the establishment of the Association, committees on medical education were regularly appointed and efforts were made to elevate the standards of medical education. Although a number of schools endeavored to cooperate in these efforts, the over-all results were so discouraging there were some who advocated that the Association discontinue its efforts in this field. The competition between the ever-increasing number of proprietary schools was tending to lower rather than raise standards. At the same time, the nature of the organization of the American Medical Association during this period was such as to make difficult the functioning of its officers and committees and the carrying out of its policies and programs. It was not until 1902 that the basic structure of the Association was placed on its present firm foundation with its House of Delegates meeting regularly and its trustees and executive officers prepared to carry out policies and programs adopted by the House of Delegates.

Soon after the reorganization of the Association, a committee was appointed to survey the whole problem of medical education in the country and make recommendations in regard to a program to be adopted by the Association for its improvement. This committee reported at the 1904 meeting of the Association. Dealing as it does with the establishment of the Council, it is considered worth while to quote from this report as follows:

"The American Medical Association was founded for the special purpose of obtaining a uniform and elevated standard of requirements for the degree of M.D.

"The American Medical Association has so far accomplished little toward this end. The existing standards are not satisfactory as compared to those of the other great powers.

"Our form of government makes it impossible, or improbable at least, to obtain national governmental control of medical education.

"In the absence of national governmental control, efforts to make uniform and elevate the standard of medical education can be made most effective through the agency of the organized medical profession of the entire country, and such a body we now have in the reorganized American Medical Association.

"The problem of using to the best purpose the weight and influence of the American Medical Association toward elevating medical education is a very large one and one which must be carefully worked out. This can best be done by a permanent committee or council specially created for this purpose.

"We recommend the creation of such a council. . . ."

Then followed the addition to the By-Laws creating the Council as a permanent agency of the Association with the following functions:

"1. To make an annual report to the House of Delegates on the existing conditions of medical education in the United States.

"2. To make suggestions as to the means and methods by which the American Medical Association can best influence favorably medical education.

"3. To act as the agency of the American Medical Association (under instruction from the House of Delegates) in its efforts to elevate medical education."

That the Association looked to medical educators to serve as its agents in this field of its activities is indicated by the initial membership of the Council, which was as follows: Arthur D. Bevan, Professor of Surgery, Rush Medical College, Chairman; W. T. Councilman, Professor of Pathology, Medical School of Harvard University; Charles H. Frazier, Professor of Surgery, University of Pennsylvania School of Medicine; Victor C. Vaughan, Dean, University of Michigan Medical School; and J. A. Witherspoon, Professor of Medicine, Vanderbilt University School of Medicine. Since its establishment, there have been but three different chairmen, two of whom have served as deans of medical schools.

The membership of the Council was increased in 1925 to 7 and in 1952 to 10. Of the 43 physicians who have served as members of the Council, 9 have been deans of medical schools, 26 have been members of the faculties of medical schools, and 8 have been private practitioners not connected with medical schools. A year after its establishment, Dr. N. P. Colwell became its first secretary, serving on a full-time basis. Since that time, there has been a total of six secretaries, four of whom had previous experience as deans of medical schools. The stability and continuity of the details of the many programs of the Council have been in no small measure due to loyal and efficient services of Mrs. Anne Tipner, who for many years has served as assistant to the secretary.

The original Council faced an enormous task. The majority of medical schools in the country had shown little or no inclination to cooperate with the American Medical Association in its efforts to improve medical education. That any progress whatever was made was due largely to the wisdom, determination, and diplomacy of Dr. Bevan and the indefatigable efforts of Dr. Colwell.

In 1905, the Council adopted what was then considered an "ideal standard" for the medical schools of the country to ultimately require. In that same year, it published its first classification of medical schools based on the performance of graduates in licensing examinations. It was immediately recognized that this was not a sound basis for the evaluation of medical schools. A rating system, involving 10 different categories, was then developed for use in connection with visits to the schools. Each of the 160 or more schools was visited by some member of the Council or by the secretary, in most instances by the secretary and some member of the Council. A classification of the schools was completed in 1907, and each college was notified in regard to its rating, although the classification of the schools was not published. This first inspection resulted in a raising of standards by many of the medical colleges that sought to cooperate with the efforts of the Council. Other schools keenly resented the activities of the Council.

At this same time, the Carnegie Foundation for the Advancement of Teaching had become interested in professional education in the United States. The Council learned of this interest and decided to seek the cooperation of the foundation in its

Chairman, Council on Medical Education and Hospitals, American Medical Association.

efforts to improve medical education. Excerpts from a meeting of the Council on Medical Education held in New York in December, 1908, read as follows:

"At one o'clock an informal conference was held with President Pritchett and Mr. Abraham Flexner of the Carnegie Foundation. Mr. Pritchett had already expressed, by correspondence, the willingness of the Foundation to cooperate with the Council in investigating the medical schools. He now explained that the Foundation was to investigate all the professions, law, medicine and theology. He had found no efforts being made by law to better the conditions in legal education and had met with slight opposition in the efforts he was making. He had then received the letters from the Council on Medical Education and expressed himself as most agreeably surprised, not only at the efforts being made to correct conditions surrounding medical education, but at the enormous amount of important data collected.

"He agreed with the opinion previously expressed by the members of the Council that while the foundation would be guided very largely by the Council's investigation, to avoid the usual claims of partiality no more mention should be made in the report of the Council than any other source of information. The report would therefore be, and have the weight of an independent report of a disinterested body, and would then be published far and wide. It would do much to develop public opinion."

The study of the schools was begun in 1908 by Abraham Flexner for the Carnegie Foundation and Dr. Colwell, secretary of the Council, and the results were published and widely circularized in 1910 as what is still referred to as the famous Flexner Report. I have referred to this in some detail to make it clear that the Flexner Report was a specific part of the program of the Council to improve medical education in connection with which it sought the cooperation of the Carnegie Foundation.

The influence of the Flexner Report on public opinion greatly strengthened the Council in the conduct of its program. It proceeded to publish its classification of medical schools and the battle for the elevation of the standards of medical education in the United States was virtually won. The number of medical schools was soon greatly reduced through the complete closure of many and the merger of others into stronger institutions. The success of these efforts was due in no small part to the cooperation and support not alone of the Carnegie Foundation but also of the Association of American Medical Colleges and most of the licensing boards of the country. At this time, the Council considered it necessary to establish rather rigid minimum requirements for the approval of medical colleges. Similar rigid standards were adopted by the Association of American Medical Colleges. Such rigid requirements were deemed temporarily necessary as a means of eliminating a large number of hopelessly inferior proprietary schools that were endeavoring to continue their operations. They were abandoned as soon as it was considered safe to do so. During all of this early period, the field of activities of the Council was confined to the admission requirements and the undergraduate curriculums of the medical schools.

Although the need for hospital training after completion of the four year undergraduate curriculum had long been recognized and had been included in the "ideal standard" adopted by the House of Delegates in 1905 and although such need was recognized by a large percentage of medical school graduates who voluntarily elected to take such training, it was not until 1912 that the Council undertook a program looking toward the recognition of the internship as an important phase of medical education.

After a survey of the hospitals offering internships, it published in 1914 its first list of hospitals approved for intern training. In this connection, it sought the cooperation of the hospitals in maintaining educational standards of intern training. However, the value of the intern in the conduct of the service functions of the hospitals and their staffs was soon recognized and in many instances were in definite conflict with the educational objectives of the internship as an educational program. As medicine has advanced and hospital service has become more complicated, such conflicts have increased rather than decreased and much still remains to be done to place this important phase of medical education on a sound educational basis. In recognition of the important part hospitals played in the field of medical education, the name of the Council was changed to the Council on Medical Education and Hospitals.

Soon after initiating efforts to improve internships, the Council interested itself in graduate medical education in preparation for the practice of the specialties. In 1913 and again in 1919, it undertook a survey of graduate schools and graduate medical education. The results of these surveys were so disappointing that the Council decided that something must be done to protect the public and the profession from entirely inadequate short cuts to the practice of the specialties. Only one group of specialists, the ophthalmologists, had sought to deal with the problem. In 1917 they had organized the American Board of Ophthalmology for the recognition of competent specialists in this field.

In approaching the problem of education for the specialties, the Council sought the advice and cooperation of competent representatives from the various specialty fields. In 1920, it appointed 15 committees of nine members each and requested them to study the problem and recommend what preparation they deemed essential to qualify for practice in each of the specialties. These committees were the forerunners of the various specialty boards. In 1923, standards applying to specialty training were recommended by the Council and adopted by the House of Delegates. In 1927, the Council began publishing the lists of hospitals approved for residency training in the various specialties. In 1933, by which time recognized leaders and national groups had organized American boards in five different specialties, the House of Delegates authorized the Council "to express its approval of such special examining boards as conform to the standards of administration formulated by the Council." Today 18 specialty boards work in close cooperation with the Council in the field of graduate medical education.

In 1933-1934, the Advisory Board for Medical Specialties was organized with representation from each of the approved boards. The board and the Council have always collaborated closely in all programs of mutual interest, in recent years through the functioning of a liaison committee, which meets regularly in connection with all meetings of either the Board or the Council.

Since its first organization, collaboration between the Council and the Association of American Medical Colleges has been especially close. The establishment of a liaison committee more than 10 years ago has facilitated concurrent activities and actions by the two bodies. Visits to medical schools and the reports of such visits are jointly made. Joint committees have been appointed to study and conduct programs of mutual interest. The most recent such committee to be appointed is the joint liaison committee of the college association, the Federation of State Licensing Boards, and the Council. The organization of the Association of American Medical Colleges preceded the establishment of the Council by 14 years. However, the leaders of this association, like the committees on Medical Education of the American Medical Association, were having discouraging experiences in their efforts to improve medical education on a national basis. Since the establishment of the Council, the publication of the Flexner Report, and the classification of medical schools by the Council, cooperative efforts have tended to strengthen the programs of both bodies in the improvement of medical education.

The Federation of State Medical Boards, founded in 1912, is an organization with which the Council has worked in close collaboration. In fact, the annual congress, initiated by and originally sponsored by the Council, is now held under the joint auspices of the Council and the federation and is designated the "Annual Congress on Medical Education and Licensure." The Council maintains graduation and licensure records that are in constant use by the various licensing bodies. The official bulletin of the federation is published, printed, and distributed by the American Medical Association through the Council. The Council has also worked in close collaboration with the National Board of Medical Examiners, which, since its organization, has done a magnificent job in developing and conducting qualifying examinations that have served as a real contribution to licensing problems on a national basis. The military and other federal medical services have been invited to participate in the first and each subsequent session of the annual congress. The Council,

frequently jointly with the Association of American Medical Colleges, has always worked in close cooperation with all such groups.

Since the organization of the Joint Commission on the Accreditation of Hospitals, the Council staff has been surveying hospitals for accreditation at the time they are surveying internship and residency training programs, and a member of the Council is serving as one of the commissioners. For a number of years the Council has been interested in the field of the postgraduate education of practicing physicians and is just completing a national survey of this phase of medical education. It was considered of sufficient interest and importance to warrant a prominent place on the program of this congress.

As medicine has advanced, another group of national organizations have sought the cooperation of the Council. In rendering a high standard of medical care to the American public, the profession has required the services of a considerable group of nonmedical persons especially trained in fields ancillary to medicine. Upon request, the Council has cooperated with national organizations in several of these fields in standardizing, surveying, and accrediting educational programs for the training of such personnel. The relationships of other nonmedical groups in important ancillary fields still remain to be worked out.

Time will not permit even listing the various agencies with which the Council has collaborated in the interest of medical education and the medical care of the American public. In its report to the House of Delegates on Dec. 1, 1953, the Council listed 59 agencies with which it had collaborated during the previous year.

It is appropriate that, on this the 50th anniversary of its establishment, the Council expresses its appreciation to all of the various groups and agencies that have cooperated with it in its efforts to continually improve medical education. Without their support and cooperation the efforts of the Council could not have been successful. This is especially true as related to the cooperation of the medical schools, the Association of American Medical Colleges, and the medical licensing boards.

It is obvious from what has been said that the work of the Council has expanded enormously since its establishment. In 1904, the American Medical Association was unable to provide a requested budget of $5,000. The present budget of the Council is $374,400. The present staff includes 13 physicians who devote full time to the Council's program. The full-time personnel of the staff totals 20. Because of the multiplicity and importance of its programs, a reorganization of the Council office has been effected with the creation of a division of hospitals and graduate education.

The Council would like at this time to express to the members of its staff its sincere appreciation for the loyal and devoted service they have rendered in the advancement of medical education.

There are those who have suggested that organized medicine was not entirely sympathetic with the efforts of the Council to improve medical education in all of its phases. Let me read to you an extract from the Report of the Reference Committee on Medical Education and Hospitals presented to the House of Delegates at its meeting in St. Louis on Dec. 3, 1953:

"Your reference committee believes it desirable in this year's report to comment on the position which the Council on Medical Education and Hospitals occupies in the area of establishing and enforcing educational standards in medicine and related fields. Those who are not familiar with the history and traditions developed by the Council over a period of fifty years, with the support and encouragement of the House of Delegates, frequently assume that the Council's chief function is to protect the interests of the medical profession against any movements in medical education that physicians may feel are inimical to their personal interests. It is well known that the uninformed have often charged the American Medical Association with attempting through the activities of the Council to limit the number of physicians trained in this country. From time to time other less well defined calumnies are advanced to support claims that the medical profession as such should have no voice in the establishment or enforcement of the educational standards.

"This attitude which is unfortunately encountered too often is potentially a dangerous one. The Council has recognized this danger and has constantly rededicated itself to the belief that it should at all times maintain maximum objectivity and that at all times in establishing and enforcing the standards, it should be guided by the simple criterion of what is best for the public and what is best for medical education. Through the years the Council has striven, and your reference committee believes with success, to maintain this position even though it has at times brought serious criticism upon the Council from small or large segments of the medical profession who fear personal inconvenience from the Council's actions.

"The Council has endured this criticism because it believes that the medical profession's legitimate interest and important influence in the maintenance of high standards of medical education can be preserved only so long as universities, medical schools, hospitals and the general public have confidence that the profession's designated agency in educational matters, the Council, is free to devote itself to the support of sound principles of education and the welfare of society. It believes that the attainment of these objectives is also in the best interest of the welfare of the profession itself. Your reference committee feels certain that the House of Delegates appreciates the importance of this view and will support the Council in maintaining it.

"A related problem that may be appropriately discussed at this time is the relationship of the Council's standards to the laws or regulations of individual states. On occasion in the recent past, the view has been advanced that the Council should not adopt any standards for the approval of institutions that are in conflict with the laws or regulations of any state. This is an untenable position. Its acceptance would mean that the Council could not raise standards above those of the state having the lowest standards. Approval by the Council is a voluntary unofficial matter which must be requested by the individual institution. If an individual state imposes restrictions on a class of institution that will not permit them to meet the Council's standards, the institutions so affected have the choice of not seeking the Council's approval or working for a modification of the laws or regulations that prevent them from meeting the Council's standards. Your reference committee feels certain that it has the support of the House of Delegates on this fundamental issue because otherwise the Council would be powerless to have any influence on educational standards on a national basis.

"The Council is also charged with the responsibility of inspecting and approving hospitals in their functions as agencies for graduate training. It is the belief of your reference committee that this activity directly improves the quality of medical service available to the public. Furthermore, it increases the effectiveness of the profession in its responsibility for the care and prevention of ill health." This report was adopted without a dissenting vote.

Other recent evidences of the interest of the American Medical Association in medical education have been the appropriation of more than $150,000 in the support of the recent survey of medical education, conducted jointly by the Council and the Association of American Medical Colleges, and its sponsorship of the American Medical Education Foundation to which it contributed 2 million dollars during the past three years, in addition to assuming full responsibility for the operating expenses of the foundation in order that every dollar contributed to it might be distributed to the medical schools of the country to be used as they saw fit in the support of their educational programs.

The Council wishes at this time to express its deep appreciation to the officers and trustees of the American Medical Association, as well as to its House of Delegates, for the interest and support it has given the Council during the first half century of its existence. Such interest and support from the medical profession and the cooperation of the large number of public and private agencies previously referred to have been and will continue to be a stimulus and inspiration to the Council in its efforts to best serve the interests of the American public.

Although the Council derives much satisfaction in the great improvements that have occurred in medical education in the past 50 years, it fully realizes that much remains to be accomplished. We are just now entering a new era of medical education—that of experimentation in both the undergraduate, graduate, and postgraduate training of physicians without losing any of the gains already made. The Council pledges itself to con-

tinued collaboration with the medical schools and other interested groups in its efforts continually to improve medical education in all of its phases in order always to provide the American public with what they have today—medical care second to that of no other people of the world.

THE AMERICAN MEDICAL EDUCATION FOUNDATION

Louis H. Bauer, M.D., Hempstead, N. Y.

The American Medical Education Foundation established in 1951 has had a slow but steady growth. During the year 1953 the growth was much more encouraging. In 1951 the campaign was started. The American Medical Association gave a half million dollars and has made this same gift each year. The Association has now appropriated a total of 2 million dollars towards the support of our medical schools. In addition the Association has appropriated additional funds to pay the administrative overhead of the A. M. E. F., so that every dollar contributed goes to the medical schools.

During the first year of its operation, 1951, there were only 1,876 individual contributors to the Foundation. In 1952, this number had increased by 287% to 7,259. In 1953, however, the number of individual contributors had grown to 17,809, or another increase over 1952 of 149%. As to the actual amounts contributed by individual physicians, the dollar amount in 1952 exceeded the dollar amount in 1951 by over 200%. In 1953 the dollar amount again increased by 63% over that of 1952. These amounts do not take into account the sums contributed by medical societies and miscellaneous sources. Neither do they include the amounts contributed by physicians direct to their medical schools and not through the Foundation. In 1952, 78 of the 79 medical schools received an additional $2,258,534 from 30,000 graduates. The final figures are not available for 1953, but information so far received indicates that up to December over $1,228,000 from 28,000 alumni had been contributed to 72 of the 79 schools, with the other 7 still to be heard from. These funds contributed directly do not include monies given for buildings, endowments, research, and other special purposes. In 1953 the total of contributions received by the Foundation from the A. M. A., state medical societies, other medical societies, and individual contributors totaled for the first time over 1 million dollars. The exact amount was $1,090,771. Of this amount nearly $500,000 came from individual physicians.

This year we hope to obtain 2 million dollars. There is no reason why we should not reach our goal. The National Fund for Medical Education, which is seeking funds from industry, will endeavor to raise 5 million dollars. Eventually, it is hoped that the two organizations together will raise 10 million dollars a year. Since Jan. 1, 1951, the total raised jointly has been over $5,500,000, of which over $4,700,000 has already been distributed to medical schools and more than $800,000 is available for distribution. Although the amounts given to each school have been comparatively small, the amounts have been growing each year and in many instances represent the largest amount of unrestricted funds the schools have received in many years. Some of the uses to which these funds have been put include supplementing teachers' salaries, thus preventing the loss of teachers to government or industry; establishment of new and needed departments; adding seating capacity to accommodate more students; and "seed" money for special projects for which other sponsorship has later been found.

These funds from the two organizations have been given without any strings, so that the schools may use the money in any way they see fit. In July, 1953, nearly 2 million dollars was given to the medical schools from the two organizations.

State committees have been appointed and are hard at work endeavoring to raise funds. Some state societies, such as those in Illinois and Utah, have added compulsory contributions to the American Medical Education Foundation to their dues. Others have voluntary systems. The Woman's Auxiliary has also done a great deal to stimulate contributions; in 1953 this organization gave $35,000. If every dues-paying member of the A. M. A. would contribute an average of $20, we should raise $2,400,000 by this method alone. There are few physicians who could not afford such a contribution. At the present time, I am sorry to say that in only seven states has over 20% of the physician population made contributions to the Foundation.

The future of our medical schools, and hence the standards of medicine in the United States, depends to a large extent on adequate financial support of medical education. This support must come from private sources. Each doctor owes something to his medical school because no medical student ever paid for his medical education. He paid only his tuition, which varied from one-fourth to one-third of the actual cost to his school in educating him. The balance came out of endowments. The latter are not increasing and income from them has shrunk due to inflation and confiscatory tax laws. Now the doctor has an opportunity to repay his debt to his school.

I urge you to take an active part in this fund-raising and stimulate others to do likewise. The necessary money can and must be raised. I should like to close by quoting from THE JOURNAL for Jan. 23, 1954:

"The American Medical Education Foundation has enjoyed steady progress throughout its three year history and has contributed approximately 50% of the $4,764,152.79 that has been distributed to the nation's medical schools through the grants made by the National Fund for Medical Education. Recent decisions handed down by the supreme court of the state of New Jersey have removed obstacles standing in the way of corporations that wished to make donations to education. With the medical profession's attainment of a 2 million dollar annual goal, it is believed that America business and industry will produce willingly contributions necessary to meet and relieve the financial problems of our medical schools. The American Medical Education Foundation deserves the support of every physician in the United States. It has one purpose—giving financial assistance to our institutions of medical education—the same institutions that have consistently graduated the world's best-trained physicians.

"Every member of the medical profession can look with pride at the compact group of 79 approved medical schools in this country; nowhere in the world can another nation boast their equal. This system of medical education is a by-product of a nation of free people, working together to produce the world's highest health standards for their own benefit. It is a well-known fact that a medical student does not pay the full cost of his medical education. A substantial part of that cost must come from the general funds of the parent university. Therefore, it behooves all members of the medical profession to remember their obligation to the school where they received their medical training and to contribute financially each year in proportion to their means. If every member of the medical profession will resolve to make a contribution this year, the foundation will more than meet its quota during 1954."

MEASURING PROFESSIONAL COMPETENCE

Edward L. Turner, M.D., Chicago

Many years ago, Charles Victor Roman wrote: "Intercommunication begets confidence. Friendship and cooperation grow with acquaintance. Isolation accentuates differences and dissention thrives on adversity. We dislike what we do not understand and antagonize what is strange to us. Civilization rests on integration of effort." No comment could be more directly applicable to the problems confronting society today as we face the kaleidoscopic avalanche of readjustments that are taking place in every field of human activity and that necessitate ever-increasing intercommunication if that integration of effort so essential to the survival of our way of life is to be assured. Sometimes today one feels like Alice in Wonderland must have felt at the Pool of Tears, when she remarked, "How puzzling it all is: I'll try if I know all the things I used to know. Let me see; four times five is twelve, and four times six is thirteen, and four times seven is—Oh dear! I shall never get to twenty at

President, American Medical Education Foundation.

Secretary, Council on Medical Education and Hospitals, American Medical Association.

that rate." Occasionally, the problems that face medical education and licensure today pose situations that make one feel more like Alice must have felt when the Duchess remarked, "You don't know much and that's a fact." It is obvious that in this dynamic, rapidly changing scene we face problems of considerable magnitude and it is important that they be recognized, dealt with adequately, and solved for the benefit of all concerned. Those of us here tonight face the responsibility of effectively handling the heritage that has been passed on to us in this fascinating, uncertain, and challenging period of history.

Back in 1847, Helmholtz presented his treatise on "Conservation of Energy," which has been considered by many as one of the most important stimuli underlying the recent advances in science. During the same year, Sir James Simpson introduced chloroform anesthesia in obstetrics, Semmelweis discovered the cause of puerperal sepsis, and Carl Ludwig invented the kymograph, which has since bedeviled students in physiology. The Royal Academy of Sciences was founded in Vienna and the American Medical Association was organized in Philadelphia. To those of us concerned with medical education and licensure, this date, over a century ago, holds special significance, for it marked the initiation of developments that subsequently culminated in elevating medicine in our nation from a very low and inadequate state to that of world leadership today.

It is well to remind the American public as well as the medical profession, from time to time, of the historical background underlying the founding of the American Medical Association and its contributions over the past century in the interest of the general welfare. In 1855 Dr. Nathan S. Davis who played perhaps the greatest individual role in establishing the Association, wrote: "Of all the voluntary social organizations in our country, none are at this time in a position to exert a wider or more permanent influence over the temporal interests of our country than the American Medical Association. This assertion may startle the mind of the professional reader and call forth a smile of incredulity, nay of contempt, from the non-professional; but let both patiently follow me to the end and then judge. I am aware that the details on which I am about to enter may appear to some unimportant, to others tedious, and to all of the past generation, wanting in novelty and interest; but they will appear far otherwise to those who shall come after us and live when time shall have thrown his dimming veil over all the doings of our day." These were prophetic words, and as we resurvey the developments in medicine and its service on behalf of the general welfare since they were written, our profession has reason to take due pride in its heritage.

Those giants of the middle 19th century were clairvoyant, for I cannot help but be reminded at this point of a stanza written by Alfred Lord Tennyson in 1842 that is inscribed on a bronze plaque on one of the pillars in the new Seattle-Tacoma airport, which reads:

> "For I dipt into the future
> Far as human eye could see
> Saw the vision of the world
> And all the wonder that would be.
> Saw the heavens fill with commerce
> Argosies of Magic sail
> Pilots of the purple twilight
> Dropping down with costly bales."

The American Medical Association originally came into existence because of the concern of thoughtful leaders over medical education. Back in the early 19th century, around 1830, medical schools were sprouting like mushrooms all over the United States. The schools were largely commercial, exhibiting competitive and active rivalry through shortening the course of study and establishing easy means of graduation in their efforts to entice students to enter their doors and pay their fees. In those days schools both taught and licensed to practice, so that some of the potential dangers of unstandardized and unsupervised medical training then existing can readily be imagined. Since early attempts to obtain some kind of concerted action by the medical colleges, societies and institutions of the various states had been to no avail, it was felt that a national convention might be conducive to elevating the standard of medical education in the United States. None of us should forget that it was this concern over the training of physicians so that they could render genuine service of merit to the public that basically underlaid the whole idea of the national convention that eventually became the American Medical Association. The history of this organization is replete with fascinating material, but throughout the records of every annual meeting from the first one on there is continued emphasis on the education of the physician. Even though many complex problems far removed from medical education have since entered into the activities of the American Medical Association, there has never been a single annual session when its committee, and later its Council on Medical Education and Hospitals, has not played a significant role.

Problems of the commercial school, the diploma mill, lack of reasonable standards, lack of university contacts or ideals of education, however, persisted in spite of early efforts until the Carnegie Foundation for the Advancement of Teaching financed the now historical Survey of Medical Education in the United States. The report of this survey under the direction of Abraham Flexner was published in 1910. Few individuals today realize that the Flexner study was aided throughout by the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges. Information from both of these sources as well as their wholehearted cooperation was given throughout the entire study. As a matter of fact, the minutes of the Council on Medical Education in that period are most illuminating and are fascinating reading, for they record the comments of Henry S. Pritchett, President of the Carnegie Foundation for the Advancement of Teaching; Dr. Abraham Flexner, who spearheaded the survey; Dr. N. P. Colwell, then Secretary of the Council on Medical Education; Dr. Arthur Dean Bevan, Chairman of the Council; and others as the policies and techniques of the study were planned.

President Pritchett's comments in the introduction to the Flexner Report to the effect that "the first requisite for the modern practitioner of medicine is a good general education," that "any state of the Union or any province of Canada is better off without a medical school than with one conducted in a commercial spirit," and that "we should address ourselves resolutely to the task of reconstructing the American medical school on the lines of the highest ideals of efficiency and in accordance with the finest conception of public service" forecast the amazing reorganization that subsequently took place in the field of medical education in North America during the early part of the present century. Some of you here this evening may have been students in medical school or recent graduates at the time of this reorganization. Some may still have a start of surprise as they recall the drama of that readjustment.

The role played by the newly formed Council on Medical Education in the subsequent constant resurvey of medical schools, along with the active participation of the Association of American Medical Colleges and eventually the liaison cooperative studies of both Councils, has been of significant importance in advancing medical education and elevating the whole field of medical care in our nation. As the hospital became a more important part of the basic undergraduate and graduate phases of medical education, the Council on Medical Education and Hospitals of the American Medical Association, of necessity, assumed broader areas of interest and responsibility. The report of the Commission on Medical Education, appearing in 1932 under the direction of Dr. Willard C. Rappleye, clearly envisioned the rapidly expanding horizon, opportunities, and responsibilities of medicine and indicated the need for obliteration of the artificial, traditional boundaries and subdivisions of science, public health, and practice. The broader concept of the role of medicine in community life was highlighted as destined to introduce changes of importance in education and practice.

Two subsequent over-all surveys of medical education have taken place, namely, the one conducted under the direction of Dr. Herman G. Weiskotten in the middle thirties and the recent Survey of Medical Schools in the United States at Mid-Century, conducted under the leadership of Dr. John Deitrick. They both give further evidence of the continued concern of medicine it-

self over the training of its professional personnel. These surveys continue to point out the importance of eternal vigilance in the field of medical education. This vigilance involves not solely schools of medicine and the universities with which they are affiliated but also the hospitals, clinics, and organizations that play ever more important roles in the graduate education of the physician prior to his qualifying for admission to examination for licensure. Following the lead of the state of Pennsylvania in 1914, more and more states have required a minimum of a year of internship prior to licensure, although the value of such training had long been recognized by students, physicians, and medical faculties. Physicians were fully aware of the fact that such training meant better care for patients as these young men and women gained their rights to practice medicine.

As one endeavors to review the reasons for medical licensure, it is fairly obvious that it was developed for the protection of the public and not for the protection of the physician. Even the old Code of Hammurabi (2250 B. C.) carefully prescribed by law and indicated the penalties forthcoming in case the physician's administration were unsatisfactory. Aristotle in his "Politics" points out that "physicians were allowed to alter the treatment after the fourth day if the patient did not improve." In fact, we find that there has been a recognition of basic standards for admission to the profession of medicine from the very earliest days of recorded history. Consistently, there is a close tie between the preparatory background and medical qualifications of the person and his eligibility for licensure to practice the healing art. The edict of Roger of Salerno in 1140 A. D. involved examinations prior to licensure to practice medicine. The edict of Frederick II in 1224 A. D., like that of Roger of Salerno, required examination and specifically indicated that the medical faculty of Salerno should conduct the investigations of the fitness of the candidate. Clear-cut educational requirements for eligibility for examination were listed and involved at least three years of study in philosophy, five years of study in medicine and surgery, and at least one year of practice under the guidance of an experienced and recognized physician. By 1283 A. D., similar laws existed in Spain and could be found in Germany by 1347 A. D. and in Naples by 1365 A. D. There is no question, historically, but that Frederick's edict did much to elevate the status of respectable physicians and diminish the number of quacks who even then abounded.

Always, the function of licensing bodies, as far as can be determined, has been to test the qualifications and knowledge of the applicant to find out whether he should be entrusted with the care of those requiring medical attention. In other words, medical licensure is one of the broad powers possessed by a state or governing agency to enact legislation in the interests of the general welfare. Furthermore, historically, it is possible to note both restrictive and definitive methods of licensure regulating medical practice in different countries and at different periods. Licensure in the United States gradually developed out of the early chaotic conditions of medical education and practice that existed during the formative years of our nation. During the first 150 years after early colonization, students apprenticed themselves to physicians for approximately seven years; relatively few attended a medical school. In due course the physician certified the competency of his apprentice, and the certificate could then be registered by the civil authorities. Thus, the determination of competence of the young physician rested solely upon the judgment of the preceptor who had guided his training. In instances in which preceptors were well educated, their apprentice undoubtedly had opportunities to receive excellent training, but poorly trained preceptors could and did certify poorly trained apprentices.

Early medical legislation in the Colonies dealt largely with matters of "consent of the patient" and problems of fee collection. In 1772, however, New Jersey passed legislation requiring two judges of the Supreme Court to conduct examinations for licensure with whatever assistance they might need. By 1781 the Massachusetts Medical Society was incorporated with a charter that permitted it to examine medical candidates and issue testimonial letters if the candidates were found to be suitably fitted to practice their art. In the same year the New Hampshire Medical Society was granted the power to examine in medicine and certify as to the proficiency of candidates. Gradually, as new states developed they enacted legislation in regard to the granting of licensure privileges either to medical societies or to medical schools.

By 1825 matters were utterly chaotic, for all sorts of cults that sought special licensing privileges through their societies or their schools had appeared, with the result that basic educational requirements dropped and medical care in general rapidly deteriorated to a deplorable level. Ten years later, around 1835, legislation began to appear that was designed to remove licensing functions from medical societies and medical schools by placing it under boards of medical examiners appointed by state governors. One finds that there were many variations of the state board arrangements as far as their effectiveness was concerned. After the initial establishment of these boards and the licensure laws accompanying their formulation, there was a period during the middle of the 19th century when most states undertook their repeal because of the sectarianism that had developed. At the time of the Civil War it is a historical fact that there were practically no effective licensure regulations concerning medical practice in existence in the United States.

Many factors led to agitation for proper restrictive licensure legislation about 1870, and by 1895 practically all of the states then existing had developed a legal mechanism for examination and licensure of physicians. Flexner indicated in 1910 that "State boards are the instruments through which the reconstruction of medical education will be largely affected." He pointed out that, since the medical graduates must apply to them for license to practice, these boards could exert both indirect and direct power. From the standpoint of medical education the state boards deal with preliminary educational requirements, medical school facilities, and certain phases of curricula as essential elements of the candidate's eligibility for licensure, as determined by their various statutes. Examination for licensure is a powerful instrument through which standards may be maintained, the welfare of the people can be guarded, and constant elevation of the field of professional endeavor can almost be guaranteed if conducted in accord with current needs and available knowledge. State boards should constantly keep in mind that they have a tremendous obligation to the people of their state or commonwealth, for the license of the state is essentially a guarantee of knowledge, education, and skill. The average citizen is in no position to determine the knowledge, education, and skill of a physician, and a state board clearly assumes this obligation and responsibility when it reviews and licenses either by examination, reciprocity, or endorsement.

Even though state laws vary widely and many are outmoded in terms of today's needs, the state boards have contributed greatly to medical progress during the period of their existence. Just as in medical teaching and practice, however, constant change has been necessary to render service in keeping with advancing knowledge; similar readjustment challenges face licensing agencies. The methods of medical and surgical diagnosis and care are so different in some aspects today from the methods of 25 years ago that physicians as well as their patients live in a different medical world. So too, laws that were applicable to training and qualification for licensure years ago may today be inadequate or obsolete or may even serve as hurdles to the needs for licensure today, in terms of such requirements as internship, basic experience, etc. If the public for whom laws are promulgated is to benefit from them, it is essential that review, revision, and proper alteration take place in keeping with current needs at any given time.

The development of the Federation of State Boards of Medical Examiners of the United States in 1912 and its close relationship with the Council on Medical Education and Hospitals has been a natural cooperative development because of our common concern over the education, training, and qualifications of those who are to care for the sick. We have a number of mutual problems of genuine concern facing us today. Things are happening so rapidly in the scientific world that some aspects of medicine change almost from day to day. The education of physicians has become increasingly complex and difficult. Certainly problems of licensure in terms of the rapidly changing panorama have become no less demanding. Although in some

states in which medical schools exist there is increasing cooperation between faculties and state boards, there are other states in which the law interdicts members of faculties of medical schools from participating in examination for licensure qualification. Where such laws exist, it would seem wise to urge legislative reconsideration and modification. Ever closer cooperation today between medical teachers, medical schools, and state boards would be mutually advantageous and redound to the public welfare.

Matters of reciprocity and endorsement, although greatly improved, still raise in many instances the same barriers described by Osler in 1905 when he stated: "In this country reciprocity between the state licensing boards remains one of the most urgent local needs. Given similar requirements, and examinations practically of the same character, with evidence of good character, the state boards should be given power to register a man on payment of the usual fee. It is preposterous to restrict in his own country, as is now done, a physician's liberty." Then, following some case illustrations that highlight his contention, Osler continues: "What an anomaly: What a reflection on a United profession: I would urge you all most strongly to support the movement now in progress to place reciprocity on a proper basis. International reciprocity is another question of equal importance, but surrounded with greater difficulties: and though a long way off, it will come within this century."

There are many problems connected with reciprocity that raise difficulties for boards of medical examiners. What are the standards of the other state? Are they enforced? What methods are used to determine the qualifications of a candidate? Is there genuine reciprocity or are there restrictions or conditions on the part of one state that cannot be accepted by another state? What about this business of examination anyway? Who prepares them? Who reads them or participates in them if they are oral rather than written? Are they current, or are they sometimes based on the medicine of 10, 15, 25, or more years ago? Are they a sincere effort to determine competency or are some of them a form of trial through which a candidate for licensure must pass regardless of his competence? Only careful self-analysis by licensing boards themselves can furnish answers to some of these questions or help to improve the situation in case there is need for revision of objectives and techniques. Each state and each territory has its own licensing privileges and, atlhough presumably they are all seeking to determine the basic eligibility of the candidate to care for the medical needs of the public, there is no common denominator or single yardstick that gives true comparative evaluation. Actually, examination and licensure are two different functions. Successful passing of examinations still does not imply eligibility for licensure if other factors in the candidate's background or qualifications are not acceptable.

In the minutes of the annual meeting of the American Medical Association in 1887, there are indications of efforts to obtain the enactment of uniform medical licensure laws. After 10 years of further unsuccessful effort in this direction, the California Medical Society introduced the following resolution at the 48th Annual Meeting of the American Medical Association in Philadelphia, 1897:

"Resolved—that it is the sense of this Society that the American Medical Association take such action on the subject of medical legislation as will bring this matter to the attention of Congress and the President, and request the passage of such laws as will regulate by national examining boards the right to practice medicine in the United States; and, furthermore, we would urge that the delegates to the American Medical Association be instructed to make it their purpose to secure the adoption of such action by the American Medical Association." This resolution was defeated, and our nation still remains divided on this matter, for the Constitution with its state's rights provision interdicts a national licensing organization of this type. The current efforts of the Federation of State Medical Boards of the United States in cooperation with the Bureau of Legal Medicine and Legislation of the American Medical Association to study the possibilities of developing a uniform medical practice act are a most laudable endeavor and it is to be hoped that success will eventually crown their efforts.

Nevertheless, the value of more uniform standards of examination has long been felt by many conscientious, thoughtful persons, and a great advance was made in 1915 when a National Board of Medical Examiners was created as a voluntary organization designed to conduct a high quality of examination leading to certification that should be acceptable to state licensing boards as evidence of professional competence. From its very inception the National Board of Medical Examiners has conducted examinations of a high order of excellence in keeping with the current advances of medicine and designed to give a true measure of the basic knowledge, insofar as this is possible, of those who wrote the examination and passed its final orals. The National Board is not, and should not be, designed to be a licensing agency or to replace the responsibility of state agencies in this regard, but it should be able to be of great assistance in more uniform evaluation of candidates for licensure through the medium of its examination.

After the completion of part 2 of the National Board examinations in the spring of 1928, I happened to interview the president of the board prior to returning to the Near East where I was then teaching physiology. Dr. Rodman asked how I had liked the National Board examinations I had taken. I recall that I informed him that I had found them excellent, searching, and very fair, with no "loaded" or "trick" questions. I also recall his comment to the effect that as long as he had anything to do with the National Board examinations he would insist that they be that kind, namely, carefully planned, straight-forward, based on current knowledge, and designed to determine the competency of the candidate. Over the years I have watched the development of the National Board of Medical Examiners and I am convinced that it holds the key to the solution of some of our mutual problems of evaluation of medical education and determination of basic professional competence. It seems to hold particularly valuable potentialities in connection with some of our mounting problems of evaluating the education of persons who have received their indoctrination in foreign medical schools. I believe that a mutually satisfactory method of procedure could be developed in which the National Board could be of great aid to the state boards and at the same time fully safeguard the rights and obligations of the state boards.

What sort of a measuring stick do we have in this regard at the present time? From my point of vantage it appears to be highly unsatisfactory. A uniform procedure for screening the professional competence of foreign graduates individually would render a far greater service to the state boards than the combined efforts of the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges can render through attempts to evaluate and list foreign medical schools. In an effort to aid the various state boards of medical examiners, these two groups began to publish a list of foreign medical schools in 1950. This list contained the names of medical schools in which the two Councils felt basic medical education was of such nature that graduates could be considered on the same basis as graduates of approved medical schools in the United States. Subsequently, each year the list has been revised and republished. Recently it has been included with other pertinent information in a compendium of information concerning foreign medical schools and the status of foreign medical credentials in the United States. The list now includes 39 foreign schools.

The data underlying the evaluation of this group of schools and leading to their inclusion has been obtained by recognized American medical educators well known to both Councils. These persons, during the course of trips abroad, have been able to visit, study, evaluate, and report on certain medical schools. Neither the Council on Medical Education and Hospitals of the A. M. A. nor the Executive Council of the A. A. M. C. have available the staff personnel or funds necessary for maintaining such a staff to carry out a constant evaluation of foreign medical schools on the basis of recurrent surveys, follow-through studies, etc. A recent register of world medical schools has been issued by the World Health Organization in Geneva. It lists over 550 medical schools in various parts of the world.

The problem of conscientiously evaluating the medical schools on a world-wide basis poses obvious problems and difficulties that currently are almost insurmountable.

The Councils have endeavored to clearly indicate that the absence of a school from this current listing does not indicate either approval or disapproval but means, primarily, that there is lack of adequate information on which to justify its listing. However, the absence of a school, regardless of how good its program may be, from this list may and frequently now does serve as a means of denying one of its graduates the right of sitting as a candidate for examination before a state board or of being considered eligible for licensure. If the medical practice act of the state requires a candidate to be a graduate of a school approved in these listings, absence of a foreign medical school from the list eliminates its graduates as eligible contenders for examination or licensure. Much consideration has been given to this problem in recent years, and it seems advisable that there should be a careful analysis of state medical practice acts with serious consideration being given to the cooperative development of some commonly acceptable yardstick or screening mechanism to evaluate competence of the foreign graduate. Some mutually acceptable screening device would furnish far more information regarding basic knowledge and competence of graduates than could be obtained through a program of listing foreign medical schools on the basis of presently available means of foreign school evaluation.

The National Board examinations could through mutual agreement of some kind become a highly effective and exceedingly desirable uniform screening device of significant value to state boards in the determination of eligibility for further state board consideration, other factors being satisfactory. Since the matter of examination can be so clearly divorced from the right to license, it would seem logical and exceedingly helpful to recognize throughout all states and territories, the merits of a common, up-to-date, well-supervised, single screening yardstick of evaluation. Certainly the basic needs for medical knowledge and competence can be no different in Maine than they are in California, Minnesota, or Florida. If, however, the National Board examinations are to be of assistance in this regard, arrangements should be consummated to guard the rights and obligations of the state boards. It would seem logical that candidates from foreign schools should first submit complete credentials to the state board of the state in which they desired to seek licensure. If the state board determined these credentials to be satisfactory, they could then request the National Board of Medical Examiners to screen the candidate for evidence of professional competence through the medium of their examinations. Part 1 of the National Board examinations should be of particular value in furnishing evidence as to the basic science background of the candidate.

There are other matters of mutual concern that might be discussed, but time permits of mention of only one or two. One of them centers around the question of whether some of our boards of basic medical sciences are accomplishing their intended purpose of safeguarding the public through guaranteeing suitable preparatory training or are simply raising hurdles to the licensure of well-trained physicians. Basic science board examinations are almost as different as the 19 states, the District of Columbia, and the Territory of Alaska in which they are conducted. There seems to be lack of agreement as to what to include in basic science examinations. There can be no denying the importance of basic knowledge as a background for medicine, but questions can be raised as to what constitutes the most valuable means of determination of this background. Perhaps one of the most important questions that might be asked of licensing bodies is why any person (humans being as they are) should be licensed for life without having to demonstrate in some way that he still is a competent professional years later. Practice does not necessarily associate itself with progress nor does practice make perfect, and, even though experience has always been considered as a good teacher, this does not always hold true.

Should the responsibility of a licensing body only indicate a guarantee of professional competency at the time of licensure and completely ignore evidence of failure of professional progress on the part of a person so long as he remains clear of the toils of the law? True enough, along with experience, most conscientious physicians are constantly striving to learn more so as to better serve their fellow men. They can readily furnish whatever evidence might be needed in support of continued and augmented competence 10, 20, or 40 years from the date of original licensure, but what about those who cannot? I do not pretend to answer the question but would like to indicate that here is a powerful aspect of licensure potentiality that should be more effectively utilized. In the specialty fields today, board certification involves further evidence of competence above licensure requirements that has obviously stimulated much effort on the part of persons seeking such certification. In the course of the last 100 years, medicine, like knowledge in general, has progressed to a degree that seems almost incredible. The contributions of medicine to society in helping to reduce the incidence of many diseases and almost to eradicate some and in extending the life span as much in the past 50 years as in the previous 2,000 have not eliminated the need for medical service but have materially altered the entire panorama of practice facing the physician today. It is imperative that medical education keep thoroughly apace with the changing order and offer the type of indoctrination essential to meet the new challenges constantly confronting us.

The challenge to medical licensure is one of equal importance. The power of licensing agencies to exert a tremendous influence along with the medical schools in constantly elevating and improving the standards of medical care cannot be overemphasized. This power must be used constructively. It is my firm conviction that this can best be achieved through the intercommunication that begets confidence and that in the fields of medical education and licensure there must be cooperation to avoid the isolation that accentuates dissention and creates the misunderstandings that occasionally arise from lack of integrated effort. Our Council on Medical Education and Hospitals of the American Medical Association, the Federation of State Medical Boards of the United States, the Association of American Medical Colleges, the National Board of Medical Examiners, and all of our affiliated professional organizations as well as the profession at large face today the greatest challenge they have ever confronted. Let us meet them fearlessly and ever more effectively.

PERSONNEL PROBLEMS

Frank B. Berry, M.D., Washington, D. C.

It has always been accepted as sound policy to sit very still and listen for at least six months when one has assumed a new position, particularly one as much in the spotlight and surrounded with as many pitfalls and responsibilities as Assistant Secretary (Health and Medical) in the Department of Defense. Therefore, I hope that you will forgive me if at times I seem to be upon somewhat insecure ground.

Our new approach to this problem is predicated upon the assumption that those of us here today who hold an M.D. degree have all been through similar experiences in our medical school careers and in that formative period have held similar aspirations and hopes. It was a great tumble from Olympus when, in three short months with our college degrees safely tucked under our arms, we found ourselves freshmen again and almost as crass as we were three or four years previously. Although not as great as the years in college, there is still a wide variation in maturity between the first and fourth year medical student as he receives his degree. Let us think for a moment about men 25 years of age. They have varying degrees of maturity; they have definite ideas; they are blessed with "visions out of golden youth"; and many have already assumed great responsibilities. Some have even been through a war in which they have had the decisions of life and death, not only for themselves but for the men they commanded, and also decisions of government of conquered areas in their hands. Others have had to endure the tortures and decisions of imprisonment.

Assistant Secretary of Defense (Health and Medical).

We now want and need men of this age group in the armed services. As a matter of fact the law has provided that they shall enter one of the three services for a period of two years. More than that, the armed services themselves need a hard core of regular officers, about once again as many as they now have, and during these two years the services hope to be able to persuade a certain number of these young officers to make that career their life work. At the moment the armed services seem to be held in rather low esteem; you are all aware of the publicity given this problem in the daily press. The commission under Admiral Womble of the Navy has issued a splendid report, citing very well the factors involved. In addition, Dr. Hannah, Assistant Secretary of Defense for Manpower and Personnel, has strengthened this report with a letter from his office in which he points out that there are actually now more inducements afforded an officer in the regular service to resign his commission than to continue on in his chosen work. It should be remembered by everyone in this country that the armed services are formed of our flesh, are an integral part of our body corporate, and exist for our protection and help not only in time of foreign war but also for aid in local disasters.

To say that there has been dissatisfaction with the Doctors Draft is gross understatement, yet we shall live with it until June 30, 1955. The chances are that from August to November, 1954, there will be a considerable number of doctors called into the armed services. These calls will be met and deferments arranged through the Medical Special Registrant Section of the draft boards. We hope that the deferment question may be considered in somewhat similar fashion as it was under the old Procurement and Assignment regimé in World War II.

We are looking forward to the end of the Doctors Draft and it was with this in view that our office sent out the letter that you have all received asking your help and the assistance of the students themselves. We realize that the answers obtained do not apply to the present fourth year class; it was merely a test run. In the short space of time allotted you have cooperated generously. Usable answers were received from 1,806 students in 47 medical schools. As many of the reports were perforce not complete, it seems better therefore to give you the results in percentages rather than actual numbers. These results are of great interest to us as I am sure they will be to you. First, as to the choices between Army, Navy, and Air Force, they are Army 27%, Navy 37%, and Air Force 36%. Next as to preferred time of service: These fall into two chief categories, immediately after internship and after residency training. The actual results are as follows: immediately after internship 39%, after two years' training 15%, after residency 46%. In this you will see the seeds of a matching plan. We believe this information can be made available to us in a rather simple manner by the use of machine record cards properly punched for sorting. Each card will have the medical school and date as the first line, then the name, age, and married or single, followed by the address of the person. Next will come the address of the local draft board and draft classification, the location of the internship, and then the preferences listed one, two, three, and four —Army, Navy, Air Force, and Public Health—after internship, internship plus one year, and after full residency. A large number of men can be eliminated at once, namely, those desiring service immediately after internship. This will then leave the remainder to be considered for deferment or further action. Obviously a perfect match will not be possible, but it will at least offer helpful guidance. This will be particularly true if and when it seems likely the armed forces will not require the complete output of the medical schools each year. If the medical graduates appearing for service under the regular draft run true to form, there will be about 20% deferment for physical or mental disability. Inasmuch as this is a selected group of our population, it seems likely, however, that this figure will be somewhat smaller. It also seems probable that those who desire internship plus one year of training can be readily accommodated by the armed services. The real problem will rest with the group who desire full residency training. First, it may not be possible to defer all of them, and second, they or the hospitals in which they work may wish to change their status. This determination must be left to the man himself, the hospital involved, and the needs of the nation. None of the armed services or this office has the power of deferment. According to law, that decision rests with each local draft board. The Selective Service System headquarters is looking for and will appreciate help in this matter, and, although they do not have the power of overriding the local draft boards per se, they will presumably and gladly cooperate in any reasonable system of deferment. Certainly the armed services do not want their ranks recruited entirely from those with only a one-year internship. It is essential that they have men with varying degrees of training. They will probably need more of general duty officers, namely, the one-year internship, than the others, but there will also be a need for men with moderate training and for a certain number with full training. It may be well to continue the medical advisory system to the draft boards, such as a procurement and assignment division for doctors. Here is at least the germ of an idea of a matching plan in which students, medical schools, hospitals, and the services are all considered.

We have considered a second method of dealing with this problem at the cessation of the Doctors Draft Law in June, 1955, although we do not consider it to be as valuable nor as equitable as the procedure just outlined. No change of the law itself is necessary, simply some alterations in the regulations. According to this plan all fourth year students would have their induction physical examinations during the last six months of their fourth year and the first six months of their internship or even in a shorter period. They could then be separated into "classes" according to the requirements of the armed services. For example, there might be a class of July 1, 1955, another of Jan. 1, 1956, a third of May, 1956, etc. This at least would allow the students and interns to know exactly when they were going to have to enter the service. This is of considerable importance to them because so many, perhaps 40% or more, have heavy financial obligations as they graduate from medical school; some are already married and have families or are about to enter that state, and it is essential that they have some opportunity for accuracy in their plans.

A third possibility, which is controversial, presents itself. It might be possible gradually to work toward a uniform two year period of hospital internship, or training, at the completion of which the great majority of this group would be available for military service with a smaller portion reserved for residency training and deferment consideration. This provides for a far more natural break in medical training than the one year internship. A great many at the completion of two years' hospital training would gladly enter the armed services, and after discharge many, probably a majority, would enter directly into general practice or would be prepared to resume a short residency in one of the specialties or continue with a full residency. Certain it is, however, that those who went into general practice would be far better prepared for it at this time than after the one year internship plus military service. If such a course is finally elected by you, and the Department of Defense and Selective Service think it can be consummated, this problem will then require further approval and study by the various major boards and medical and surgical associations. I offer this as a plan worthy of your serious consideration, as I am one of those who believe that it will insure us a better-prepared group of doctors entering general practice and a mature group equally well qualified to enter the specialties.

All three of these plans that I have outlined will require the full cooperation of the medical schools along with Selective Service and the Department of Defense. The first plan will require the active participation on the part of the students, and this seems to me the most equitable arrangement that we can devise at this time. If we can eventually work toward a two year period of hospital training for all before they enter our military service, this type of matching plan will still be applicable. In any event, if some such plan as this is finally adopted, it will require wholehearted cooperation on the part of the schools and the students as well as Selective Service and the Department of Defense in order to insure its successful operation.

HOW BAD IS THE DISTRIBUTION OF PHYSICIANS?

Frank G. Dickinson, Ph.D., Chicago

At your meeting three years ago, I discussed the supply of physicians' services and made some references to our study of the distribution of physicians by medical service areas. This study, started in 1947, is nearing completion and should be published in April of this year as Bulletin 94, "Distribution of Physicians by Medical Service Areas." In this paper I will present a brief sketch of the two score conclusions of this study.

In a sense, this paper is an extension of the one I gave three years ago, which was published in THE JOURNAL (**145:** 1260 [April 21] 1951). Some of you may recall that I featured my home county—Pike County, Illinois. The number of physicians in that county declined from 42 to 16 in a generation, and the population decreased from 27,000 in 1920 to 22,000 in 1950. Yet this smaller number of physicians today is providing more medical service than the larger number had done a generation ago. I also called to your attention the fact that the number of rural mail carriers in the United States had declined while the number of rural mail boxes serviced had doubled and the number of pieces of mail had skyrocketed. After commenting on the great increase in the "output per physician," I discussed the general question whether there was or would be a shortage of physicians and expressed the view that a "surplus" by 1960 was more likely than a "deficit." You may also recall that another speaker at your conference three years ago—Dr. Howard A. Rusk, Chairman, Health Resources Advisory Committee, National Resources Board—came from Washington and predicted a shortage of 22,000 physicians by 1954 (*J. A. M. A.* **145:**1256 [April 21] 1951). This morning I shall talk about the supply situation in April, 1950, when the census of population was taken. I shall refrain from any speculations regarding the situation that might exist in 1960. We have spent our time and effort trying to find out what the supply situation was in April, 1950, rather than what it should have been then or what it will be or should be in 1960.

Findings

1. One-sixth of the land area of the United States was beyond a 25 mile radius from the closest physician in active private practice, but only one-sixth of one per cent of the people resided in these areas beyond the 25 mile radius. Almost 89% of these areas and three-fourths of the population of these areas were in the Mountain and Pacific regions.

2. The circle of fixed radius, the town, or the county are poor areas for indicating the supply of physicians. A fixed radius has implications in the wide open sections of the West different from those in the crowded communities along the eastern seaboard. The town as an area must be rejected as an area because many persons do not live in towns. The county must be rejected as an area because persons cross county boundary lines to do their trading as if those boundaries did not exist.

3. Every place (city, town, or village) over 5,000 population had at least one active practitioner, and 96% of the places with 2,500 to 5,000 population and 88% of the places with 1,000 to 2,500 population had an active practitioner. Slightly more than one-fifth of the places between 100 and 1,000 population had an active practitioner; moreover, three-fifths of the places between 750 and 1,000 population had an active physician, and almost one-half of the small towns under 1,000 population had less than 250 inhabitants. But, as stated above, a town is not an acceptable area.

4. The trading area provides a unit for study of the trading habits of the people. It alone can be used for grouping together physicians and the persons whom they serve.

5. Marketing researchers classify goods as convenience, fashion, or service and have delineated areas for many commodities and services within each of the three categories. Since the services of the physician do not fall completely into any one of these categories used in marketing research, it was necessary to describe a completely new set of areas, which we have called medical service areas.

6. A trading area is described by its centers and boundaries. A primary trading center is a town that draws considerable trade from the surrounding territory and loses relatively little trade to other towns. We adapted this definition of the primary center in defiping a primary medical service center, as a town which, relative to the surrounding territory, was a primary source of physicians' services.

7. In the literature on trading areas, the United States has been divided into many areas—as few as 13 and as many as 1,461. The type of commodity or service under study influences the number of areas. In our study we found 757 areas. It is a pure coincidence that a study of health districts by the United States Public Health Service in 1945 divided the country into 760 areas, only 3 more than our 757.

8. Who chose these centers and bounded these areas? A long list of the cities in each state arranged in descending order of population was sent to the secretary of the state medical association, who selected the primary centers in his state. In many instances some of the medium-sized cities were omitted from the list of primary centers that he designated. Some important commercial centers did not qualify as primary medical service centers. Conversely, some towns of little commercial prominence were chosen because they were, relative to the territory served, primary sources of medical services in his opinion. (Three primary centers in sparsely settled sections had only one active physician.) The secretary examined the boundaries established in other trading area studies and consulted with local physicians in establishing the boundaries of the medical service areas for his state. Through our office or through direct contact with the secretaries of the medical associations of adjoining states, boundaries of the 212 interstate areas were agreed on. Since physicians through their practice and through referral of patients give considerable direction to the flow of medical trade, our medical service areas resulted from the informed opinion of members of the medical profession and the laymen and the physicians who are members of the staffs of the state medical associations. In determining whether a given town should be located in Area A or Area B, we advised the state association secretaries to consider the flow of dollars paid to physicians as more important than the number of patient visits; for example, an appendectomy for which the patient paid $100 would be considered equal to 20 house calls at $5 per visit. Because of the great assistance given by the state medical societies this seven year study must be regarded as a joint study.

9. Actually, there were four distinct steps in the preliminary part of this investigation, which was reported in our bulletins 80 and 80A. First, the 1,051 primary centers were selected. Second, the areas were bounded. Third, those primary centers that offered every type of medical service and surgery were further classified as prime-primary centers; we designated 88 cities as prime-primary centers, although undoubtedly there are more than 88 prime-primary centers today. Fourth, all other places with one or more physicians were designated as secondary centers. These secondary centers should be considered as centers of small "areas" within the larger medical service areas. Of these 14,141 secondary centers 6,109 had only one physician but each of 45 secondary centers had more than 100 physicians. The names and the locations of the primary centers and the locations of the secondary centers are shown on the sectional maps in Bulletin 94A. The medical service area maps show the boundaries of these 757 mutually exclusive medical service areas that circumscribe the people and the physicians upon whom those people depend for most of their physicians' services.

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10. The 14,141 secondary centers were divided into two classes: about 13,000 had at least one active physician, and about 1,000 did not have a general practitioner, part-time spe-

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cialist, or full-time specialist. Moreover, about 5,300 places had only one active physician; "one-doctor towns," if you please. About 156,000 of the 205,000 physicians in the 48 states and the District of Columbia in April, 1950, were classified as being in active private practice. In other words, three-fourths of all physicians were in active private practice and one-fourth were inactive; roughly, one-half of the inactive were interns or residents and the other half of the inactive were mostly federal physicians or retired and not in practice. Some students might prefer other combinations of types of practice in the computation of population per physician, e. g., active, including interns and residents. The data in Bulletin 94 are shown for nine type-of-practice categories; hence, other combinations can be made. The tabulation below presents the number by nine types of practice:

General practitioners	76,158	37.2%
Part-time specialists	23,261	11.3
Full-time specialists	57,035	27.8
(Active private practice)	(156,454)	(76.3)
Administration, research, industry, and local government	1,014	0.5
Full-time medical school staff	1,768	0.9
Federal government	10,245	5.0
Retired and not in practice	10,423	5.1
Interns	8,784	4.3
Residents	16,307	7.9
U. S. Total for April, 1950	204,995	100.0%

11. Two-thirds of all physicians and 42% of the United States population were located in the 1,051 primary centers. The percentages were 68% of all physicians, 66% of active physicians, and 83% of the full-time specialists. In passing, I might say that these percentages compare rather favorably with the percentage of trade that is done in the primary trading centers selected by marketing researchers, a fact that is not surprising, because the physician is one of many who sells his services.

12. I shall have more to say regarding population-physician ratios for each medical service area, even though such ratios are very inefficient measures of the supply of physicians' services. At this point note that we found 731 persons per physician in the U. S. in April, 1950, counting all physicians, and a national ratio of population per active physician of 958.

13. In our study, we examined 33 characteristics of each of the 757 medical service areas. We made arrays of these 33 variables, found the quartile values, and computed the coefficients of quartile deviation (which some statisticians still call the coefficients of dispersion). I will not offer you today too much detail on the results of these computations, but a few ranges may help; for example, the smallest medical service area was about 100 square miles in area (medical service area no. 262, whose center was Key West, Fla.) and the largest, almost 35,000 square miles (no. 838, Reno, Nev.); the population of the areas ranged from 2,000 (no. 825, Moab, Utah) to 8,800,000 (no. 98, New York City); the number of counties involved, in whole or in part, ranged from one (no. 829, Kanab, Utah) to 42 (no. 424, Nashville, Tenn.); the population per square mile ranged from 0.5 (no. 835, Winnemucca, Nev.) to 8,500 (no. 129, Newark, N. J.); the number of physicians ranged from one to 22,000; in fact, three areas had only one active physician (no. 754, Jordan, Mont., no. 826, Monticello, Utah, and no. 829, Kanab, Utah), 26 had no more than 5 active physicians, and one area (no. 98, New York City) had 17,000. I hope that these ranges and the arrays will convince anyone who needs to be convinced that the United States is a large country and variations are the rule, not the exception. But I hardly need to tell this audience that it would be unreasonable to expect uniformity in population-physician ratios or in any other characteristic of these areas. From the standpoint of the statistician, however, the most important result of these computations was a clear indication that the relative variation in population-physician ratios was much smaller than the relative variation in most of our other 31 characteristics of each area. Stated in more general terms, population-physician ratios varied less than most of the other characteristics of the areas. I feel certain that every person here will be very pleased to know that population per active physician was among the most stable characteristics of the 757 medical service areas.

14. In examining the extreme values in the arrays, the medical service areas located in the Mountain states were the most noticeable; for example, their areas were the largest, had the fewest people, and the lowest population density. And, as you would expect, three-fourths of the Mountain areas had no interns.

High and Low Ratio Areas

15. In Bulletin 94 we have placed our major analytical emphasis on the 75 areas that had the highest and the 75 areas with the lowest number of persons per physician. In stressing the top 10% and the bottom 10% of the 757 areas, we deliberately avoided stress upon the middle 80% of the areas. We thought that stress on the extreme areas would meet "head on" many questions about the distribution of physicians in the United States, as most such questions do deal with extreme areas.

16. There are two sets of 75 high and 75 low ratio areas, one based on all physicians and one based on only active physicians. Since there is not time to cover both sets of ratios, I shall stress the high-active and low-active areas. Since 63 of the areas were both high-all and high-active, only 87 different high-ratio areas were analyzed in detail; likewise, only 94 different low-ratio areas were similarly analyzed.

17. Anyone from Arkansas, Idaho, or Wyoming would look in vain for a shaded intrastate area in his state, for none of the top and bottom 10% of the areas arrayed by either set of population-physician ratios were located in these three states. All of the areas in these three states were among the middle 80% of the areas. A review of much of the literature in this field would have led you to expect to find more than 32 of the 75 high-active areas in the three southern regions (13 in the South Atlantic, 14 in the East South Central, and 5 in the West South Central) and fewer than 34 in the Mountain (13) and the West North Central (21) regions. Stated another way, you would have expected to find among the 75 high-active areas more than 32 of the 228 areas in the three southern regions and fewer than 34 of the 241 areas in the sparsely settled mountain and plains sections. It is well known that life expectancy at birth in 1940 was highest in the West North Central region. (Regional data for 1950 are not yet available.) A cynic might claim that this fine health record in the West North Central states should be attributed to the fact that the people have not been handicapped by having too many physicians. A more rational explanation might be the strong Scandinavian strain, but Swedes apparently live longer in Minnesota than they do in Sweden.

18. The more important contrasts between the 75 high-active and 75 low-active areas should be helpful.

(*a*) They were quite similar in size, but the 75 low-active areas had 12 times as many inhabitants and were 13 times as densely populated as the 75 high-active areas.

(*b*) During the 1940's when the population of the United States increased 14%, the population of the high-active areas increased less than 3% as compared with an increase of more than 17% for the low-active areas.

(*c*) Only 2,020 active physicians served the 4,700,000 persons in the high-active areas, or 2,320 persons per active physician, whereas almost 81,000 active physicians served 56,000,000 inhabitants of the low-active areas or only 690 persons per active physician. The ratios range from 5,100 down to 2,020 in the high-active areas and from 900 down to 380 in the low-active areas.

(*d*) Whereas 49% of the active physicians of the United States were general practitioners, 66% in the high-active and only 45% in the low-active areas were in general practice,

and, whereas 36% of the active practitioners in the United States were full-time specialists, only 16% in the high-active and 42% in the low-active areas were full-time specialists.

(*e*) Maternal mortality and infant mortality rates were distinctly higher than the national rate in the high-active areas and somewhat below the national rates in the low-active areas. Before jumping to the conclusion that the trouble in the high-active areas was only the fewness of physicians, one should note that in them only 58% of the births were in hospitals compared with 87% for the entire United States and 97% for the low-active areas. The lower percentage of hospital births undoubtedly indicated a large number of factors —among which the general level of health education was unquestionably important.

(*f*) In the high-active areas, there were no medical schools and no prime-primary medical service centers, but in the low-active areas, there were 50 of the 72 four-year medical schools and 42 of the 88 prime-primary medical service centers.

(*g*) The per capita buying power of the high-ratio areas did not present an extreme contrast with the national figure, although the high-ratio areas were below the national figure and low-ratio areas were above it.

(*h*) The total number of centers, including both the primary and the secondary, was less than 700 in the high-active and almost 3,400 in the low-active areas; and the medians were 6 and 31.

(*i*) In general, the physicians in the high-ratio areas were older than those in the low-ratio areas, which is consistent with the sharp difference in population growth.

(*j*) Of the 75 high-active areas, 29 were sparsely settled, 29 were characterized by small scale farming and small-scale industry, 8 by large-scale farming or cattle raising, 4 by mining, and the remaining 5 might be called urbanized. In contrast, most of the 75 low-active areas were highly urbanized.

(*k*) How many extra physicians would have been required in the high-active areas to have made the maximum ratio 2,000 persons per physician? Only 361! This is less than one-fourth of one per cent of the 156,500 U. S. total! Insofar as this study reveals any possible figure which might remotely be called "a national physician shortage of 1950"—and I do not believe there was a shortage in 1950—it is 361 as a maximum. The possibility of shifting, as across a checkerboard, 361 physicians out of the low-ratio areas into the high-ratio areas confronts an economist with certain questions about economic equilibrium. These theoretical considerations suggest that an 18% increase would have been required in all of the 757 areas, not only in the 75 high-active areas, if a condition of equilibrium and stability were to be maintained throughout the entire country. But I shall not burden you with a highly theoretical discussion so dear to the hearts of economists.

(*l*) Some may quarrel with 2,000 as a theoretical maximum ratio for any area as a criterion for judging the excellence of physician distribution. A critic of the attempts of federal bureaucrats to prove a national shortage once told me that if there were no more than 2,000 persons per active physician in a meaningful area, he would consider the distribution excellent and proof of an adequate national supply. Obviously, his standard, like other area standards, inherently assumes a national shortage. His standard is, admittedly, high. Yet it may serve some useful purpose. (The 2,000 maximum ratio is independent of the fact that there were 75 areas that had higher ratios.) Perhaps other critics would claim that a nation is not well supplied with physicians unless no meaningful area has more than 1,500 persons per active physician. Applied to the 262 areas in April, 1950, that had more than 1,500 persons per active physician, an additional 2,530 physicians would have been required under this standard. I daresay that neither 361 nor 2,530 is an alarming national deficit—if any existed—requiring heroic measures. One can, of course, choose any premise he wishes and then prove, at least for himself, that there is, was, or will be a national shortage of physicians.

(*m*) We have devoted 18 pages in Bulletin 94 to the comments of state medical societies about the supply situation in the two sets of high-ratio and low-ratio areas. What did they report to us? The high-ratio areas were not the areas from which the state societies in April, 1950, were or had been receiving numerous and repeated requests for additional physicians. One state society, Missouri, attributed the apparent satisfaction with the supply situation in their five high-ratio areas to the relatively large number of osteopaths, particularly in the Kirksville area. These comments plus general knowledge should, I submit, convince anyone that areas with high population-physician ratios are not, *ipso facto*, crying out for additional physicians.

Scatter Diagrams

19. Because a great many statements have been made regarding certain relationships between the supply of physicians and other factors, we prepared five sets of scatter diagrams. Each of the nine regions was treated as a unit in these diagrams. Bearing in mind that we do not claim to have examined all possible economic variables, we submit the following comments. We found no definite relationship between per capita buying power and general practitioner ratios. We do not rule out the possibility that both factors were subordinate to other economic values, whose influence we did not seek to isolate. On the other hand, the scatter diagrams did show a favorable relationship between the ratios for full-time specialists and per capita buying power. This relationship, however, was probably due to the correlation of buying power with population size of city rather than from a direct "causal" influence attributable to buying power alone. Also, population density did not serve as a good explaining variable. Incidental to this phase of our work, we found that the coefficients of relative variation for county ratios were half again as large as those for medical service area ratios. This finding suggests that anyone who wishes to "prove" that population-physician ratios are extremely varied should compute them for counties, even though physicians are not restricted by their license to practice medicine in a particular county and their patients certainly pay no attention to county boundary lines in seeking medical care. Going from the medical service area to the state as an area, we found an even greater uniformity in population-physician ratios.

Summary of Results

1. The distribution of physicians in the United States in April, 1950, in relation to the persons whom they served, was excellent but not perfect.

2. Physicians and the patients they serve vary so much that population-physician ratios are not good measures of supply. In a phrase, we hope that, by computing them for medical service areas rather than for political areas, we have made population-physician ratios "less worse." The relative variation in population-physician ratios computed for counties was much higher than for ratios computed for the 757 medical service areas—the only "trading" areas ever published for the entire United States that entirely ignore all county and most state boundary lines.

3. Our only speculation on that nebulous subject, "a national physician shortage," is our comment that 361 additional physicians would have been required in April, 1950, in the 75 high-active areas to make our maximum area ratio 2,000 instead of 5,100 persons per active physician. That is intended to be a somewhat pointed comment for the special benefit of those who have predicted a shortage anywhere from 22,000 to 49,000 in 1954 or 1960. One can choose any premise he wishes and then prove, on the basis of that premise, that there is, was, or will be a national shortage or surplus.

With this study of geographic distribution completed, the Bureau will start making plans for a future study of the functional distribution of physicians, as that will probably be the next line of attack.

THE EDUCATIONAL COMPONENT OF MEDICAL LICENSURE

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The purpose of medical licensure, like that of medical education, is to assure the public that those authorized to practice medicine are competent by establishing standards of education, evaluating the qualifications of candidates, and conducting examinations to test the knowledge and fitness of candidates. This public responsibility has been recognized in one form or another since the early beginnings of history. The appraisal of physicians to discharge their obligations to patients and the community has been accepted for centuries.

Roger II of Sicily issued an edict in 1140 forbidding anyone to practice medicine who had not passed the necessary examinations. The Fourth Lateran Council in 1215 issued additional rules in regard to surgical procedures. Frederick II in 1224 extended the regulations promulgated by Roger II and even specified that the medical faculty of the University of Salerno should conduct the necessary professional tests. The educational component of medical training was clearly stated even at that time when it was specified that a candidate must have studied philosophy for three years and medicine for five years and have practiced under a qualified physician for one year. Please note that those educational conditions were laid down 700 years ago.

The first decade of the century witnessed the struggle in this country of the universities, the state governments, and the profession to establish adequate levels of medical education, licensure, and practice. In the fifth decade we are confronted with the challenge of maintaining the standards that have been developed during the last 40 years. The recruitment of medical students has indeed made progress since the days of Daniel Drake when "A neighbouring physician wants a student to reside in his office; or one son of the family is thought too weakly to labour on the farm or in the work shop; he is indolent and averse to bodily exertion; or addicted to study, but too stupid for the Bar, or too immoral for the Pulpit; the parents wish to have one gentleman in the family, and a doctor is a gentleman."

Since present day medical licensure so largely depends upon professional education, it is appropriate to refer to the reform that was started when Harvard University increased the length of its medical course to four years in 1892 and Johns Hopkins University founded its medical school in 1893. The adoption of the graded curriculum for instruction in 1899, the first nationwide report on medical schools published by the American Medical Association in 1900, and the creation of the Council on Medical Education in 1904, followed by the monumental Flexner Report of 1910, were milestones in the evolution of professional education and licensure in this country. Under the leadership of licensing bodies, the medical profession, and the educational institutions, the practice of medicine here was developed to a status not exceeded anywhere in the world.

There are many aspects of medical licensure. The earliest legislative acts dealt with such questions as collection of fees, quarantine, vaccination, and construction and maintenance of isolation hospitals, with rules regarding the standing of irregular practitioners in civil courts and numerous other matters. The evaluation of professional conduct and hence of personal qualifications of the physician is an essential feature of the maintenance of high levels of medical practice. The public has a right to expect that professional education shall have determined as far as possible the character, integrity, industry, resourcefulness, reliability, motivation, and personality of the person applying for medical licensure, as well as having provided an adequate intellectual preparation. The basic medical course today in all of the approved schools of the United States and Canada is focused upon an effort to select students who show evidence of those qualities and to offer opportunities for the student to acquire the requisite knowledge, essential habits and methods of study, certain basic aptitudes, and understanding of ethical principles that are the fundamental features of proper medical practice itself.

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Concentration, therefore, is upon basic knowledge, habits, skills, attitudes, and principles. It is not possible to judge these aims in schools of medicine about which little is known or in which factors such as those described are not given sufficient emphasis. The qualifications of a person to practice medicine can be judged best by a reliable faculty, under whom the student has studied for several years and which has devoted itself to adequate supervised instruction. Through the joint efforts of all, the unity of purpose of medical licensure and medical education in this country has been achieved.

A threat of considerable magnitude is now confronting the licensing bodies, the profession, and the country. The question as to whether or not we have multiple levels of practice is no longer hypothetical. We are establishing double standards. This has been brought about by the influx of large numbers of graduates of medical schools of foreign countries, which for a variety of reasons have not provided, and cannot currently provide, the pattern of medical education regarded everywhere in this country as minimal. There are many explanations for this situation. In the different countries there often is almost a complete lack of secondary education, inadequate facilities in what we regard as preprofessional preparation, and a dearth of laboratories, teaching personnel, and clinical instruction so necessary in our concept of the proper training of the physician.

In a great many of the foreign countries there has been no effort to restrict the number of students to the capacity and facilities in the so-called medical schools. The instructional plans are frequently didactic with little intention to provide bedside instruction and supervision, guided laboratory experience, or other features that we now take for granted here. These statements are not criticisms of particular persons, some of whom are well-fitted personally and intellectually. The fact remains, however, that in most instances they have not had, nor could they obtain in their country, a satisfactory professional education. A few of these persons are highly competent in spite of inadequacies of training. Many also have practiced in the country from which they came.

It is the present policy of the United States government in its effort to foster international good will to admit into this country large numbers of displaced persons from all over the world and from many areas that have not had an immigration quota. They include considerable numbers of physicians about whose professional ability no questions are asked. Recent legislation will permit the entrance of several hundred thousand immigrants above the previous quotas, among whom will be many doctors. The infiltration of the medical profession of the United States by large numbers of doctors who have not been able to obtain a proper basic professional education is almost certain to lower the general level of practice in this country during the next several decades. The numbers coming in are so large that they cannot readily be absorbed without that effect. The mode of entrance in the country is largely through the internships and residencies. The medical boards and administrations of many hospitals are more eager to secure the services of these persons than to provide the highest quality of professional care to patients or to conduct a satisfactory training program, even though the hospital may be approved for internship and residency training by the Council on Medical Education and Hospitals. As matters stand now, many hospitals have in effect discontinued the internship as an essential part of the educational scheme of medicine. Far too often it is regarded purely as a hospital service for the staff.

It is generally recognized in informed circles that there are many hospitals approved for internships and residencies that provide little or no supervision or training. This puts the responsibility directly upon the staffs of individual hospitals, upon the profession, and upon the hospitals. Strenuous efforts are now being made in some institutions to strengthen the instructional program through proper guidance of qualified persons on the house staff.

In a symposium on the internship in 1939, the situation was fully recognized then. Quoting from that occasion, it was "well known that a number of the internships now approved do not fully meet educational standards. The difference between the number of internships available annually and the number of medical graduates suggests the possibility of enforcing higher

standards of approval, which, if applied, would reduce the number of approved institutions. Judgment regarding an internship must rest on the competence and character of the staff and their ability and eagerness to provide adequate supervision and instruction. Hospitals which cannot develop a satisfactory instructional plan because of lack of facilities, inadequate staff or absence of educational interest would benefit by employing a paid house staff recruited from graduates of recognized hospitals."

The situation has reached serious proportions in certain sections of the country. About one in four of all interns and residents in the hospitals of the country is an alien. The number of foreign interns has doubled in the last three years, and alien residents have increased about 300% in the same period. About 48% of all house staffs of the hospitals of the state of New Jersey, for example, are graduates of foreign medical schools, mostly nonapproved. This whole problem of internships and residencies is aggravated, as we all know, by the demands of the defense services, which have temporarily created a vacuum in the normal process of medical training, of which the internship and residency are recognized as essential parts, and this has produced widespread shortages in house staffs.

The suggestion has been made in a number of states, and is the policy in some, that graduates of foreign schools, regardless of their qualifications, would become eligible to take the state licensing board examinations after one or two years of internship in an approved hospital. This may be the only practical way of dealing with the situation, but it is, nevertheless, unsatisfactory for the reason that the great weakness in the preparation of the foreign graduate, in most instances, is that he has had no real training in the basic medical sciences and has had no individualized, supervised bedside experience. Merely giving some clinical responsibilities, largely in the nature of services to the hospital, cannot possibly correct the basic defects of the educational preparation of most foreign graduates. This is particularly true since most of these foreigners cannot obtain appointments in the hospitals that provide satisfactory educational guidance and training. They, therefore, are going to marginal institutions, even though approved, and cannot be expected to obtain professional competence.

You are familiar also with the suggestion that our medical schools undertake the reeducation of these persons. That can only be done at the expense of our own programs. The medical schools of the country are already over-loaded, under-staffed, and in need of more adequate financial support in order to continue the quality of instruction and research that has been built up during the last 40 years. To dilute the efforts of existing medical schools is certainly no answer to this problem. An accrediting agency for the approval of foreign medical schools, either in this country or through some international organization, would be confronted with many difficulties, some insurmountable, others rather delicate. One may express doubt as to the wisdom or validity of such an approach. The best method, unsatisfactory as it is in many instances, seems to be the appraisal of each candidate on an individual basis, in itself a time-consuming and at times a baffling task.

The licensing bodies and the profession of the United States are obviously confronted with a situation that is largely out of their control. The United States government is welcoming large numbers of foreigners, including those who have received medical training in their native country, without prescribing any standards of professional competence. The physicians are here; practically all of them plan to remain in the United States. Most of them sooner or later will enter practice with or without some form of intermediate training. It is entirely possible that we may be entering into a period of medical practice in the United States in the next few decades reminiscent of that which existed in this country about 1900, when the proprietary medical schools and "diploma mills" produced large numbers of partially trained doctors.

It is easier to state this over-all problem than it is to propose a satisfactory solution, yet we have to face the facts as they are. Surely one important step to take is to stimulate the medical boards of the smaller hospitals and the municipal institutions to provide a real supervised educational experience for recent medical graduates. The far too liberal policy of approval of hospitals for alleged internships and residencies should be reviewed. The hospitals that cannot provide satisfactory training and guidance of the house staff should seek some other method of discharging their responsibilities to patients and the community. There are several ways of doing this, including the employment of properly trained physicians on a salary basis for a period of years as they begin to establish themselves in practice in the local community. This would have a beneficial effect in due time on the whole problem of securing a better distribution of practitioners for most communities in the country while, at the same time, meeting important local needs of good hospital services. Another idea, although difficult to execute, is better screening of the graduates of the foreign schools by practical examinations. Most foreign graduates have not had supervised laboratory or clinical instruction. The few postgraduate institutions are trying to help meet this situation by providing review courses and some clinical training, but they can take care of only a small fraction of the numbers of foreign doctors now entering the country. A considerable proportion should not be allowed to practice medicine at all.

Regardless of what we do temporarily, we must at least recognize the pressure to create two standards of medical practice in the United States at the present time, which will have particular significance for the near future. We are rapidly creating two classes of citizens in terms of medical care received. Those of the first class will be attended by graduates of approved medical schools; those of the second class will receive medical care largely by graduates of unrecognized medical schools. Unless this situation is met with courage and the conviction that we shall not surrender the results of 40 years of effort in raising the standards of medical licensure, practice, and education in this country, we shall be faced with conditions resembling those of 50 years ago and with the prospect in 20 to 25 years from now of having to go through another reformation in medical education and licensure. "Those who cannot remember the past are condemned to repeat it." There is no need to view this matter with undue alarm but the facts now seem to be well established. It is the responsibility of our licensing bodies, of the profession, of hospitals—particularly their medical boards, and of the educational institutions, so far as they can play a part, to combine their efforts in dealing with the influx of foreign graduates from substandard medical schools. We have an obligation and a challenge that it is our duty to accept if we are to continue our determination that professional education, in the fullest connotation of that term, must be the most important single component of medical licensure.

PROGRAM FOR GRADUATE TRAINING IN NONUNIVERSITY HOSPITALS: THE HOSPITAL VIEWPOINT

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Any sound program for graduate training in the nonuniversity hospital obviously must function effectively from several different viewpoints. 1. It must function effectively from the viewpoint of those who are receiving the training, else it will die a natural, even though painful, death. 2. It must function effectively in constantly improving patient care, else its entire structure will prove to be a sterile one. 3. It must function effectively in its role of stimulation of the hospital's attending staff, or it will have fallen far short of its goal. 4. It must function effectively for the greater hospital and community medical good, or the hospital administration and its board of directors will not be able to countenance the added cost of the program to the hospital and its community. In one sense, the problem of the training program in the nonuniversity hospital is more simple because there is not the added responsibility of training medical students. This, however, becomes a disadvantage when the time comes for the nonuniversity hospital to enter into competition with university hospitals for the fourth year medical students who are sought as next year's interns.

In this field the hospital must depend largely upon its reputation, the word of mouth interpretation between last year's fourth year medical students and this year's third and fourth year students, and the manner in which it has faced its intern train-

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ing problems to put it in favor with the offices of the deans of the schools from which the hospital draws its interns. Most nonuniversity hospitals have learned to their chagrin how difficult it is to build a sound training program over a period of years and how quickly the reputation of such a program can be destroyed by a very few disgruntled or even dishonest members of an intern staff. While it must be admitted that this may happen, in general it is still true that the drawing power of a hospital for house staff applicants is likely to be in direct proportion to the care, interest, sincerity, and teaching capacity of the attending staff in its hospital's graduate training program. Before World War II medical students were advised to use the hospital's necropsy percentage as a yardstick of its potential excellence; now medical students are advised, in addition, to carefully look for and investigate the hospital's graduate training program as a criterion of the adequacy of the hospital's house staff training potential. It should also be kept in mind that good medical education and good patient care within the hospital are not contradictory.

". . . in 1940, while there were few, if any, internship or residency positions unfilled, there were less than 12,000 interns and residents on duty. Conversely, today approximately 25% of all house staff positions are vacant. The number of interns and residents on duty, however, has risen to over 24,000. These facts are significant in any appraisal of the current situation relative to house staff shortages . . . [therefore] it is apparent that the staffing of hospitals with interns and residents should be considered as two facets of the same basic problem."[1] It is recognized that rotating internships constitute 90%, straight internships 9%, and mixed internships 1% of the present group in this country. Since nonuniversity hospitals conduct about one-half of these internships, it is to be hoped that they carefully and repeatedly shall scrutinize and rejuvenate their training programs.

ORGANIZATION OF THE PROGRAM

With greater and greater attention being accorded to nonuniversity teaching and training programs, it became obvious within the past five years that such programs must be organized, coordinated, and supervised. This task in the large hospital could no longer effectively be assigned to a busy practitioner of medicine. Thus was born the position of Director of Intern (or House Staff or Graduate or Medical) Education. His duty is to organize, coordinate, and supervise the educational program of the hospital in cooperation with and assisted by the intern committee, the hospital staff, and the hospital administration. It should not be expected, and it would be totally impossible, for one teacher to fill such a many-sided position. Such a director, therefore, must be given adequate authority to make it certain that his recommendations will be carried out effectively. To insure this, he should have a position on the attending staff as chief of his department of medical education, equal in standing to the chiefs of the major services. He also should have an official position on the hospital administrative staff, and his final authority should stem from the board of directors by way of the chief administrator. If this latter point is not heeded, the changing tides of staff politics and personnel gradually will undermine his effectiveness. In the program for graduate training in the nonuniversity hospital, the hospital should expect its attending staff to take a constant and active interest in keeping the program for graduate training adequate and attractive for intern and resident, as well as for junior and senior attending physician. The secret of having a program adequate for all levels of graduate training is to present a program in which all levels take an active part.

The teaching hospital should expect that its attending staff will add to its roster only those men who, in addition to the recognized qualities of basic importance, are interested in and enthusiastic about teaching and who are willing and able teachers. If, later, it can be shown that any of these men feigned interest in teaching in order to attain staff position, the mechanism of the annual review of individual staff members should be used to withhold staff promotions and to rid the staff of its "dead wood." Staff leadership by seniority only can be deadly in its effect upon the staff and the training program. The sound program for graduate training in nonuniversity hospitals must include, therefore, an adequate, effective, interested, and able staff.

TRAINING PROGRAM

Teaching Rounds.—The heart of any good training program is its bedside teaching rounds, made regularly with the same interns or house staff on the same wards for an adequate period of time so that all involved may become acquainted and so that adequate teaching and observation may be carried on with continuity. The house officer should be allowed increasing responsibility as his training progresses and his capabilities are demonstrated. This, obviously, means that teaching rounds cannot be exclusively specialty rounds, "business" or disposition rounds, or "social" rounds. They must leave the house officer with the feeling that he has learned something and that he has received help and guidance with his daily diagnostic and therapeutic problems. Obviously, these can never be "track shoe" rounds but will require much time and effort on the part of the attending staff. The staff that is unwilling to devote adequate time and painstaking care to its program for graduate training should not undertake a program at all.

Medical Experience.—The rotating internship should include at least three months on a medical service that is not subdivided into subspecialties dealing with cardiac, allergic, gastrointestinal, skin, and infectious diseases. Those on the staff in these subspecialties can act in a consultant capacity in caring for the patients with diseases of these types who are in the general medical wards. In general medicine and general surgery alike, there must not be rapid rotation of services or attending staff if proper continuity is to be had and if the intern is to be present long enough to become a responsible member of the medical team.

Outpatient Experience.—It is recognized that the house staff must be trained in emergency procedures, but it also must not be forgotten that 85% or more of their patients later in practice will have those disorders that are seen in the outpatient department and in the follow-up of patients from the wards to the outpatient department. Opportunity for the observation of minor ills and minor diagnostic and therapeutic methods must not be neglected. How frequently we see the young physician who has been well trained in emergency and major medical procedures but who is completely bewildered, practically and therapeutically, when faced with "croup," the common cold, or the emotionally upset patients with a 4 + review of symptoms!

Surgical Experience.—In the training in general surgery for the rotating internship, which should last at least three months, there should be close concentration upon the problems of surgical diagnosis, preoperative and postoperative care, and the emergency care of injuries. Obviously, none of these matters can receive worth-while concentration if the intern is second assistant in the operating room from 8 a. m. until 2 p. m. or later. We must realize that there is little learned at the distal end of a surgical retractor. This is not teaching and becomes an even more serious deficit if it interferes with the intern's attendance at scheduled teaching conferences. With house staff levels above the internship, a reasonable amount of teaching in the operating room can be done if the surgeon or surgical subspecialist is willing to make the assistant resident a member of the team who cooperates and takes an active part in the operation as well as in the preoperative and postoperative care of the patient.

Pediatric Experience.—With the widespread use of antibiotics in the home and in the physician's office, ward as well as private pediatric services in hospitals have decreased markedly in size. It is highly essential therefore that all pediatric patients in the hospital be included in the teaching program. Additional methods should be used to further strengthen the pediatric teaching potential, such as (*a*) "well baby" or "well child" clinics, with ample opportunity to see the infant and child through important developmental periods which would involve immunization, preventive medicine, and public health, and which would provide contact with social and community health agencies; (*b*) a newborn nursery with its excellent opportunity to detect and observe congenital defects; (*c*) crip-

1. Annual Report on Internships and Residencies, Council on Medical Education and Hospitals, J. A. M. A. 153:275-281 (Sept. 26) 1953.

pled children clinics and hospitals with opportunity for better rounded training; and (*d*) an adequate outpatient department in which children from the hospital may later be followed and from which patients can be admitted without excessive restriction.

Obstetric Experience.—During this period of training, the rotating intern must "deliver a minimum of 10 patients under [direct] supervision." [2] It is also highly important that he learn to recognize the abnormal so that later in practice he will not attempt to deliver the complicated obstetric problem. The residency staff must have adequate teaching and supervision, and teaching rounds should be an expected and important part of the program. If close attention is not paid to this service, it is likely to degenerate into a mechanical midwifery type of program.

Psychiatry Experience.—It would seem only right that all physicians, medical, surgical, or specialist, should have a good orientation in psychiatry because of the complete miscibility of the emotions with any and every clinical problem. Since this is difficult in the first year of a rotating internship, the psychiatrist should be called to the wards frequently, on a consulting basis, regardless of the service on which the intern is training. While it is accepted that every internist should have a specific part of his residency training on the psychiatric service, surgery and the specialties could well adopt this plan for the production of specialists whose knowledge is better-rounded and who are more understanding.

Laboratory Experience.—It can be stated flatly that the laboratory is abused and its contributions to medicine misused in direct proportion to their excessive quantitative use by the house staff and the attending staff. Whether the house staff is expected to do all of the laboratory work or none of it, either extreme contributes to poor training and lack of understanding of the laboratory potential in the proper care of the patient. The intern cannot be expected to understand this unless he has opportunity to do laboratory work with his own patients under supervision. The urinalysis, the blood smear, and the test for occult blood in the stool of the patient made when he is admitted may be more helpful in the proper orientation of the intern than the writing of laboratory orders for a "complete blood count," "complete blood chemistry," etc., to be done by the hospital's hired technicians.

It has been our experience that, if the pathologist is willing to make rounds on the clinical wards once each week, take part in the discussion, and ask a few well-directed questions as to why certain laboratory tests were requested and what was expected to be learned from them, the quantity of unnecessary laboratory work decreases and its meaningful quality increases. It is essential that each house staff member attend the postmortem examination of his own patients, and it is very valuable to have reviews of gross organ specimens once or twice each week for all house staff members who can possibly attend them. It is also very important for the pathologist or a member of his staff to be present for consultation at all major teaching conferences.

X-Ray Experience.—Each intern and resident should see all roentgenograms taken of his patients, preferably in company with his attending teacher or the radiologist or both. It is also important that the radiologist or a member of his staff be present at all major clinical conferences since these almost invariably include X-Ray findings. Here again, the radiologist can be effective in decreasing excessive use of roentgenograms by asking well-directed questions regarding the need for certain examinations that are likely to become too much a matter of routine.

OTHER IMPORTANT TRAINING OPPORTUNITIES

Clinical Pathological Conferences.—The clinical pathological conference has withstood the long test of time as one of the best methods of medical teaching. Here the house staff, attending staff, and pathologist have a very real opportunity to improve their work on the basis of the review and comparison of clinical and postmortem findings. Also, the death review, if made in a careful manner, should lead to constant improvement in both diagnostic and therapeutic aspects of patient care.

The Tissue Committee.—The alert staff will insist upon a tissue committee, whose task it shall be critically to review normal as well as pathological material removed at surgery. If such a committee functions adequately, it can do much to guide the scientific honesty of the staff and to avoid the poor public relations that stem from excessive surgery.

Journal Club.—The journal club can be very stimulating and can assist all in attendance in a critical review of the current medical literature. The larger the hospital, the more essential it is for the journal clubs to be organized on a departmental basis. The house staff journal club should be of, by, and for the house staff and should not be dominated by a paternalistic advisor.

Private Patients in Teaching.—In times past it has been understood and accepted that all patients in charity hospitals and government hospitals at all levels (city, state, and federal) and the ward patients in university and nonuniversity hospitals would be a part of the teaching and training program. Because of the socioeconomic changes of the past two decades, which include rapid growth of Blue Cross, Blue Shield, and numerous private and public insurance plans, the ward services rapidly have become depleted. It is essential, therefore, that private patients be integrated into the teaching service in university and nonuniversity hospitals alike if adequate training material is to be available. In using private patients for teaching, it is essential and courteous to ask the permission of the patient and the physician, but, unless the private physician is secure in his patient-physician relationship and unless he appreciates the potential benefit to himself as well as to his patient, he may not be willing to cooperate. When cooperation is secured, it is most important not to discuss diagnosis or treatment with the patient or the patient's relatives, or within hearing distance of them, without the physician's permission. It is equally important not to interfere with the private physician's control of the patient.

When private patients are used in the teaching program, it is essential that the range of serious disorders important to house staff training is represented and that there is also a cooperative private physician group who will make follow-up possible. It is also essential that the private patient's physician be secure enough in his physician-physician relationship that he is willing to share responsibility with the house staff in the care of his patient. It definitely can be said that private patients can be very valuable in house staff education if the opportunities for study and follow-up are comparable to those on the wards and if parallel high standards of teaching and patient care exist. How true the statement, so ably expressed by Armstrong: "A private service can work well only if all persons involved understand the goal, want it, and will work for it." [3]

Cooperative Program.—Some nonuniversity hospitals today, in the face of a decreasing ward population, should be aware of and avail themselves of the teaching material in the municipal, state, and federal hospitals within their vicinity. In some instances, a cooperative working program may be set up, for example, with a Veterans Administration hospital in the area. The nonuniversity hospital provides opportunities lacking in the usual VA hospital in the form of pediatrics, obstetrics, female medicine, and surgery, while the VA hospital may provide additional important surgical training material for the resident staff of the nonuniversity hospital.

Hospital Medical Records.—These are a valuable part of any graduate training program. They are as valuable in the future as the care with which they are written in the present. They must be critically surveyed and supervised by the attending staff. While it is worth while for the resident staff to assume some responsibility in assisting and supervising the intern staff in this work, the final responsibility for adequate records rests upon the shoulders of the attending staff.

Medical Library.—It is no longer sufficient merely to have a medical library; it must also be readily available and supervised so that textbooks, reference books, and current journals

2. Essentials of an Approved Internship, Council on Medical Education and Hospitals, J. A. M. A. **151**: 579-585 (Feb. 14) 1953.

3. Armstrong, S. H.: Private Beds in Medical Teaching, J. A. M. A. **153**: 82-90 (Sept. 12) 1953.

are available on a qualitative rather than necessarily a quantitative basis. Many good medical libraries today, pressed by the high cost of overlapping services, have excellent lending arrangements with larger and more complete medical libraries within reasonable proximity.

Research.—A program organized for clinical research should be available in the large nonuniversity hospital. Its presence and the surgical stimulation provided by a laboratory doing research with dogs makes residencies more attractive to the imaginative resident who wishes to carry out an investigative project of his own or one under guidance as a part of his training program.

COST OF TRAINING PROGRAM

A graduate training program in the nonuniversity hospital is not inexpensive. It has been stated that the cost of such a program might well range from 2 to 5% of the hospital budget. The cost will greatly exceed this range if the hospital attempts to attract its house staff with excessively high salaries, living quarters and maintenance for wives and children, and extravagantly expensive attractions that in no manner contribute to the teaching or training value of an internship. Such attractions, if excessive and if used as a substitute for a good training program, are in direct violation of the Essentials of an Approved Internship prepared by the Council on Medical Education and Hospitals of the American Medical Association.

COMMENT

Hospital boards of directors and hospital administrators in some places do not have ready access to the thinking of their hospital's attending staff. There is also an all-too-prevalent feeling on the part of many attending staffs that their administrators and the directors cannot be trusted. We must strive constantly to promote better understanding by means of joint conference or liaison committees made up of the most responsible members of both groups. This is a must if we are to provide the best possible medical care in the hospital and its community. This is also imperative if we are to withstand the starry-eyed impractical idealism of too rapid socioeconomic evolution. I am convinced that there are still enough men of good will and good faith in lay and medical groups alike to make this type of cooperative effort both happy and practicable.

Our nonuniversity hospital staffs must be kept abreast of the medical times and, since good physicians must remain students, every good hospital must be and must remain a teaching hospital. This will not be possible unless we can build and maintain a sound program for graduate training.[4]

4. Leonard, J. C.: Non-University Teaching Hospital and Postgraduate Medical Education, Yale J. Biol. & Med. 22:623-635 (July) 1950.

VARIATIONS ON A THEME

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Self-evaluation and self-improvement have always been, and I hope always will be, an integral part of medicine and of the medical profession. We may well be proud of those men who in 1847 issued the call for an organizing meeting of what became the American Medical Association and stated in the first sentence, "It is believed that a National Convention would be conducive to the elevation of the standard of medical education in the United States." From that day the medical profession through various groups has concerned itself with improving medical education and medical care so that mankind might benefit. With this viewpoint medicine may qualify as a profession in the fullest sense of Judge Pound, "A profession is an organized calling in which men pursue a learned art and are united in the pursuit of it as a public service—no less a public service because they make a livelihood thereby."

Specialization within the profession has brought with it problems and conflicts. The original group to recognize some need for self-evaluation in the specialty field was the ophthalmologists. On May 15, 1917, the American Board for Ophthalmic Examinations was incorporated, and thus what is now the American Board of Ophthalmology has been in continuous service for 37 years. In the succeeding 16 years there were only three other groups that saw the advantages of self-evaluation—the otolaryngologists in 1924, the obstetricians and gynecologists in 1930, and the dermatologists and syphilologists in 1932. The four groups, together with representatives of the medical schools, the Federation of State Medical Boards, the Council of the American Medical Association, the Hospital Association, and the National Board of Medical Examiners, met at the annual convention of the American Medical Association in Milwaukee in 1933 to organize what is now the Advisory Board for Medical Specialties. The Advisory Board is thus 21 years old this year and is an adult. With individual human beings the 21st birthday is an important event and it should be also with human institutions. It is a time when full responsibility is conferred and assumed. The days of hiding behind others and shifting responsibility to others are over. The adult must take his place in society and give leadership to those ideas and principles for which he stands.

As your president on this 21st birthday, I have chosen to speak not as the father lecturing his son, but as the son admonishing himself and enuciating a philosophy. It is also a farewell, as I have spent my 12 years on the Board of Pathology and hence am not eligible for reelection under our Articles of Incorporation and By-Laws. I have both a sense of relief and a feeling of regret. The sense of relief comes in that I shall not have to work 18 hours a day for six days in two periods each year and then go home to make up the lost sleep and reaccumulate adrenalin. The feeling of regret is derived from many sources—the opportunity of close association with my colleagues, the opportunity to see young men and women come before the board as youngsters and then a few years later hold responsible positions in their professions, and the opportunity to play a small part in the broad program of self-evaluation to benefit medical care.

I have chosen as my topic "Variations on a Theme." I am not a musician; in fact, I am tone deaf. But what I wish to discuss with you is analagous to the musical concept of variations on a theme. The theme is that a specialty board is a voluntary agency concerned with certification of the competency of professional health personnel in limited fields of practice. Let me read that again because the remainder of my remarks are just variations on this theme. A specialty board is a voluntary agency concerned with certification of the competency of professional health personnel in limited fields of practice. The essential points or full notes of the theme are a voluntary agency, certification of competency, professional health personnel, and limited fields of practice.

The first variation on the theme is that a specialty board is not an educational agency. Most boards acknowledge this and so state specifically in their booklets. The usual statement is: "The Board [Pathology] is in no sense an educational institution and the certificates of the Board are not to be considered degrees." Yet, one board has this statement: "To encourage improvement of educational facilities and clinical training in Xology [anesthesiology] at undergraduate and graduate levels in medical schools and hospitals." To make sure you heard six words in that quotation let me repeat them together: "At undergraduate levels in medical schools." It is true that the introductory three words are mild—"To encourage improvement"—but just the same here is an outside pressure group in a specialty attempting to influence undergraduate medical education. Let us not forget that we were and are physicians before we were specialists. One of the fundamental defects of medical education today is the teaching of more and more specialties and less and less medicine. We, of all people, should know that a special superstructure must rest on a firm broad foundation. We must support the principles recently formulated by the Association of American Colleges: "Undergraduate medical education must provide a solid foundation for the future physicians' development. It should not aim at presenting the complete detailed systematic body of knowledge concerning each and every medical and related discipline. Rather, it must provide the setting in which the student can learn fundamental principles applicable to the whole body of medical knowledge, establish habits of reasoned and critical judgment of evidence and experience, and develop

President, Advisory Board for Medical Specialties.

an ability to use these principles and judgments in solving problems of health and disease." Thus, as the kettle drums roll for the end of the first variation, I say, let the specialty boards stay out of the field of undergraduate medical education entirely and completely. It is not a proper location of operation for those concerned with and interested in specialties.

The second variation on the theme is that a specialty board is not the only agency that is concerned with maintaining and elevating standards. There are many other groups that are vitally interested and, I venture to say, may know more about "maintaining and elevating standards" than do the trustees of the specialty boards. I would be the first to defend the thesis that a specialty board must be an independent agency and not be forced to respond to every pressure brought to bear on it from minority groups. We thus have the possibility of two evils, too little and too much. In the category of too much I would place this statement of one board (Obstetrics and Gynecology). A certificate may be revoked if the diplomate is guilty of violation of the standards of ethical practice and "the expulsion from or suspension from the rights and privileges of membership in the American Medical Association or any state or county medical society affiliated therewith, any recognized Canadian Society, the American Association of Xology, the American Xological Society shall be conclusive evidence of the violation of such standards of ethical practice of medicine." Another board (Anesthesiology) has a requirement, "Be a member in good standing of the American Medical Association, the state and local county medical society or comparable national society approved by this Board. He must be a member of the American Society of Xology, Inc."

In my book the American Medical Association and national societies should be and have been a force for good and should be supported, but I fail to see how competency to practice a specialty of medicine is influenced one whit by these memberships unless we assume they are the only source of continuation education and they are not. Again, I have every regard for boards of censors and judicial councils, but, in my concept of democracy, action by a self-constituted group is not final. There must always be the right of appeal. I much prefer the procedure of another board (Otolaryngology), which provides for possible revokation of the certificate "if the physician so certified shall violate the standards of ethical practice of medicine or shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Directors, moral turpitude in connection with his practice of medicine."

On the score of too little let us not forget the admonition of Arthur Dean Bevan in his first chairman's address of the Council on Medical Education in 1905: "The conclusion was reached that the most effective work could be done by this Council not independently but by cooperating with other agencies which were interested in and working for the elevation of standards of medical education." For the moment, and the moment only, I will acknowledge that the type and quality of graduate medical education is of some concern to the specialty board. One board (Ophthalmology) expresses this as "To act as advisers to prospective students in Xology." Another (Proctology) states, "The American Board of Xology shall encourage the establishment of appropriate educational and training standards and shall determine that candidates for certification receive adequate preparation." Still another (Psychiatry and Neurology) has as a chief function of the board: "To consider and advise as to any course of study and technical training, and to diffuse any information calculated to promote and ensure the fitness of persons desirous of qualifying for a certificate of qualification to be issued thereby."

Strains of the first theme are now intermingled with those of the second. All three of these statements indicate a possible concern with the details of the graduate training. If we approve certain institutions and persons to provide training, and I suppose we must do this if for nothing more than information, let us not then second guess the man who is responsible for the training. For example, do not provide that the practical examination may include a separate visit to the institution where training was secured, and "inspection of clinical records, reports of departmental activities, library facilities, available apparatus, etc. . . ." If these were not satisfactory, the residency should never have been approved.

As the violas carry the first variation and the cellos repeat the second variation, the trumpet comes forth with the third variation—that a specialty board is not a standardizing agency. One board (Internal Medicine) expresses this well: "The Board assumes the responsibility for determining the standards of knowledge to be acquired, but upon the candidate rests the responsibility of acquiring the knowledge to fulfill these standards." Let us not forget that in all education, including graduate medical education, learning is more important than teaching. On the other hand, another board (Urology) states: "The Board is attempting to increase and to standardize the facilities for Xologic training in teaching institutions." I was more than a little shocked to find that my own Board of Pathology states "Its chief aim, as stated above, is to standardize the qualifications for the specialty of pathology." There is a difference between standardization and minimal standards and the two should not be confused. In many things in the last decade, especially in medical research, the glamour of the project or the system has put the man into the shadow. Progress will end when a group of men, no matter how wise they may be, force all other men into a groove of standardization. We will really be in a rut then, the rut of *status quo*.

Now with every instrument playing and repeating in full volume, let us emphasize the brain of man even if we have to discard entirely the system. Let us have more of the policy of one board (Otolaryngology): "In exceptional circumstances, certain candidates who can not meet all the above requirements may be accepted for examination, upon recommendation of the Credentials Committee, substantiated by action of the Board"; or of another Board (Urology): "In specific instances the Board may waive any part of these requirements with the exception of the item of personal appearance." When I first read this I got the same shock that perhaps some of you did. Well, here it really is. Competence is related to personal appearance—shoes shined, trousers pressed, ears washed, but rereading showed that the person is to come personally before the Board. Only this one board, however, provides that the diplomate whose certificate is in question may appear before the Board, a fundamental part of democracy for which our forefathers fought. Let us change just one note in this variation and thus bring up a musical picture of what is the fundamental reason for education and training. No one will disagree that the ultimate objective of education and training is the improvement of our society and the development of men and women better able to serve society. Yet, there has grown up in our educational system the idea that "I must do this or that" or "I must learn this or that" in order to satisfy someone else or some group or to pass an examination. How many times have you been told when you ask a young man why he wanted a residency, "in order to qualify for the Board." Only rarely do we hear "in order to improve my knowledge of medicine." Graduate medical education and the specialty boards are not the sole offenders here, but each segment of education should do everything it can to change this attitude and philosophy of "why secure an education."

Again let us change another note in this third variation to explore further the man and not his origin. The postwar years have brought to this country many men and women who had their education and training in other lands. There are two aspects of this problem, which can be summarized in one sentence. America, for its own welfare, must remain a land of opportunity, but the quality of medical care must be maintained and elevated. The quality of medical care is the sum total of the persons who are rendering it. Thus, again, we return to the man. Why not approach this problem as one board (Otolaryngology): "A candidate trained in a foreign country must be able to give proof of medical and graduate training comparable to the requirements of the Board." Yet this same board requires that a candidate be a full citizen for three years before admission to examination. We must remember that we of the specialty boards are passing on physicians who already have the right to practice medicine granted by a legally constituted state governmental agency. What then does citizenship for three years have to do with competency? State boards quite properly require citizenship for a license.

I hope the day will come when there will be no requirements for admittance to a board examination except good character, graduation from medical school, a license to practice medicine, and belief by the candidate that he knows enough and that the examination will become a welcome challenge to the examinee and not an expression of the sadism of the examiner. To attain this objective of the examination we must give increasing attention to improving our examination procedures and not go on year after year with outmoded techniques. Before leaving this theme I have all the instruments in crescendo repeat it again. Let us emphasize the intellectual capacity of the man even if we must discard entirely the system. America and American medicine have grown and prospered by the originality and ability of men, not by standardization.

And now the strong notes of the bassoon enunciate the fourth variation of the theme—that a specialty board is not a guild. One board (Radiology) openly disclaims the guild idea with this statement: "This Board has been organized, not to prevent qualified Xologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of Xology." Several other boards even go further; one (Internal Medicine) expresses the idea as follows: "The major object of the Board is to pass judgment on the competence of Xologists who desire certification—not to determine who shall or shall not practice Xology as a specialty." In contrast, another board (Anesthesiology) states that a function is: "To establish criteria of fitness to be designated a specialist in the practice of Xology." Less bold but also broad is another board (Dermatology and Syphilology), "The Board has been established primarily to determine the competence of physicians who specialize in Xology."

Several boards repeat and expand this variation of the theme more exhaustively. Typical is this statement (Internal Medicine): "The American Board of Xology is not concerned with any mechanism which gains special privilege or specific recognition for those physicians who have been certified in Xology. It has never been the intent of the Board to define requirements for membership on the staffs of hospitals." Another board (Surgery) goes on to say: "The Board specifically disclaims interest in or recognition of differential emoluments that may be based on certification." On the other hand, it is clearly stated by several boards, of which I cite one (Obstetrics and Gynecology), that diplomates are given a special mark in the American Medical Directory, but the Board "does not give such special recognition to Diplomates who are not members of the American Medical Association."

Even a more powerful instrument, say the tuba, now sets the fifth variation on the theme—that a specialty board is not a licensing agency. Many boards frankly disclaim this function. One board (Pathology) puts it plainly: "The certificate does not confer on any person legal qualifications, privileges, or license to practice medicine or the specialty of Xology. The Board does not purport in any way to interfere with or limit the professional activities of any licensed physician." Yet another board (Physical Medicine and Rehabilitation) gives as one of its functions: "To protect the public against irresponsible and unqualified practitioners." This might be interpreted as just theoretical but a following function puts teeth into it: "To do all things necessary or incidental to the foregoing specified purposes." A minor deviation of this theme relates to the continuing responsibility of the board for the competence of its diplomates. This same board provides that a certificate may be revoked if "the physician so certified shall at any time have neglected to maintain the degree of competency in the practice of Xology as set up by the Board and shall refuse to submit to reexamination by the Board." I seriously doubt that boards can enter into policing the practice of their specialty, which is after all only a part of the practice of medicine. The state boards of medical examiners were established to protect the public in malpractice and dyspractice.

The sixth variation on the theme comes forth with a plaintive note from a wood wind—that a specialty board is not an agency concerned with the economic status of medical practice. No board publishes this fact but let us face up to the truth that at least some discussions of eligibility and revokation of certificates in the last few years have revolved about economics. Unless some action is clearly unethical by general definition, it has no relation to competency. We can not separately set up criteria for the ethical practice of medicine and the ethical practice of a specialty of medicine; it is all the practice of medicine, and control of practice is not a proper function of a specialty board.

The seventh and final variation on the theme is this: A specialty board is not an agency out of the field of medicine and out of touch with the world. So far as I can learn only one board (Proctology) openly espouses this idea in stating its purposes: "The purpose is advancing, elevating, and developing the practice of medicine in the United States of America and elsewhere by encouraging, teaching, and elevating that branch of medical practice which deals with Xology." Each person is, first, a human being living in a changing world; second, he is a physician; and third, he is a specialist. At least one board (Neurosurgery) recognizes this in a published statement: "Properly qualified candidates who are permanent residents in and citizens of other countries and are legally qualified to practice medicine there, and who have received their training in Xology in the United States or Canada may apply for certification."

A good composition of variations on a theme at some time returns to the principal theme. To close my composition I shall do so and repeat that a specialty board is a voluntary agency concerned with certification of competency of professional health personnel in limited fields of practice. One of the major obligations of a voluntary agency is leadership. In my opinion, the specialty boards have made a real contribution to the improvement of medical practice in the United States. They can make even a greater contribution, but, as I have played the variations this morning, there have been discordant notes, certainly from the French horn and also from even more reliable instruments. As these discordant notes have been played in the last few years, others, both friends and opponents, have in typical Viennese fashion shuffled their feet. The conductor of this orchestra is the Advisory Board for Medical Specialties, which is 21 years old and an adult. A good and able conductor, especially one of legal age, can eliminate discordant notes and can bring balance and harmony into a composition that fits into the thinking of the people and from which everyone derives satisfaction and benefit. I urge the Advisory Board to seize the conductor's baton and lead.

PROGRESS OF THE NATIONAL FUND FOR MEDICAL EDUCATION

William C. Stolk, New York

I am very pleased to have this opportunity to tell you something about the program being carried out by the National Fund for Medical Education and its importance to American business and industry. For personal reasons and as a trustee of the Fund, I appreciate this chance to meet with so many of the prominent leaders of medical education in America.

I think that one of the most useful things I can do will be to explain why the Fund is important to industry, because I think an understanding of the basic reasons will be helpful to all of us who are assisting the Fund in its work. I also want to emphasize that there is a growing awareness in the business community of the contributions of medical education to business and industry as well as to all other groups and persons in the country. One of our biggest jobs, of course, is to increase that awareness until every businessman fully appreciates that, without sound and solvent medical schools, we cannot have a high standard of health and that, without a healthy nation, industry cannot operate efficiently. The important lesson to be taught is that good health is as important a national resource as skilled manpower and raw materials.

I think that with this understanding of the problem our task should not be too difficult. There are encouraging signs. Those charged with the responsibility of managing industry, for example, are realizing more and more that corporations have an obligation to assume many social and educational responsibilities that formerly were carried by persons of large means. These broadened responsibilities of corporations are being accepted today as part of the new pattern of corporate citizenship.

President, American Can Company.

More specifically, many of us in industry realize that our responsibilities include the obligation to help improve health facilities and through them the health and living standards of the people who work in our factories and offices. This growing interest of industry in our national health is not the result of pure philanthropy. It simply makes good business sense.

We live in an industrial age, with the majority of our population employed by industry. Consequently, health and medical standards today are very different from those believed adequate in the agrarian society that prevailed in America 100 years ago. We have learned, for example, that a physician cannot adequately treat a patient in the home without taking into consideration certain factors in his working environment. The doctor will want to know if he is working under tension, if his job is monotonous or interesting, if he works at a desk or on a production line. All these things and, of course, many others are pertinent to the treatment of numerous illnesses in an industrial society. At the same time, we have learned that the efficiency of the man on his job is greatly influenced by his health, his home life, the community in which he lives—by his entire social environment. There are studies, for example, that prove that the American working man is safer today on his job than during his leisure hours. Yet he is off the job 16 hours a day and only in the plant or office 8 hours. It is a matter of record that nine-tenths of the accidents and illnesses that cause absenteeism in business and industry are directly traceable to conditions in the home and community—to factors completely unrelated to the employee's work.

I think it is obvious to anyone understanding these things that private physicians, health officers, medical educators, and corporate managers must join forces in solving our health problems. This team, working closely together, can give the American working man and woman better health, better working and living conditions, and increased efficiency on the job—all of which inevitably lead to increased income and greater job security for the employee. Management and stockholders also benefit. Good health among industrial workers is certain to result in reduced absenteeism, less employee turnover, improved morale, and generally better industrial relations, which contribute to a more efficient work force and higher productivity.

For these and other reasons it is only natural that industrial management should become increasingly concerned with the financial needs of our medical schools, for medical education is the foundation of our entire health structure. If we are to have good health, we must have good doctors. If the great advances being made by medical research are to continue, we must have highly trained physicians to carry on the work. To scrimp on our medical schools is to invite a lowering of our health standards, a false economy that could adversely affect our progress for years to come. We just cannot afford to let our medical schools deteriorate. If business and industry do not provide financial assistance to medical education, it almost certainly will be necessary for government to come more and more to its support.

These are some of the reasons why Mr. Chester and Mr. Colt have been able to unite a large and expanding group of businessmen in this effort to obtain additional annual income for our medical schools. I can report to you that the nation's corporations are responding to the appeal, and I am sure that more will lend their support each year. Up to now, industry, contributing through the National Fund for Medical Education, and the nation's doctors, contributing through the American Medical Education Foundation, have each provided about half of the 5 million dollars in grants thus far awarded the schools.

We in business and industry, who established the Fund, are aware of the importance of medical education to the nation's industrial and social progress. We know that the sights must never be lowered, that there is no room in America for even one poorly trained doctor, but, despite the progress I have mentioned, there are still many who do not fully understand the vital role of our medical schools in maintaining health standards. There is still too little understanding of the close relationship between healthy workers and a healthy economy. It has not yet been made sufficiently clear that human depreciation is even more costly than depreciation of machines.

I don't think it is an exaggeration to say that without good health we cannot have good business. This is the story the National Fund for Medical Education must tell American business and industry. It must be told forcefully, well supported by facts, to many groups, through all available media. And this is where we need the help of you, the medical educators of America. You have the facts. You can tell us, for example, just what is the relation between the health standards of a community and absenteeism in industry and what, precisely, good health means in terms of efficiency on the job. We need such facts, and I am personally convinced that this is one area in which the medical schools through their deans, their instructors, and even their students can help interest businessmen in the very legitimate needs of medical education.

With the facts you can supply to us and help to disseminate, we can convince industry of the necessity to help meet your financial requirements. Actually, the need for information is twofold. Facts are essential to the Fund in telling its story. The businessman, in turn, must have facts to justify any donation he may decide to make as a result of our appeal. Most of us in management today are strictly responsible to our boards of directors and our stockholders, and they must be convinced that our expenditures are worth while.

I want to emphasize once again that you in medical education are in a unique position to help us do our job, which, of course, is to provide the financial assistance to help you to do your job even more efficiently than you are doing it now. Together we can make more and more executives aware of industry's responsibility to help maintain high standards of medical education. We can go even further and show them that it is in their own self-interest. We can show industry how it can fortify its already heavy investments in community hospitals. We can show how financial support of the 79 medical schools will guarantee the training of sufficient manpower to insure the competent operation of the countless medical institutions businessmen have helped to build.

Aside from the more technical questions involving the relation between good health and industrial efficiency, businessmen often ask such questions as "How much money do the schools need?" "Why give to a central national fund?", and "Why does the Fund give to state-supported as well as to privately supported medical schools?" These are reasonable questions and one of the Fund's jobs is to answer them fully. Candid answers to all such questions as well as to the more technical inquiries will go a long way in securing the backing of more and more of America's leading industries whose support is so essential to the Fund's success.

The Fund actually is in an ideal position to serve those businesses that want to give financial support to our medical schools. Because the average executive is busy with corporate affairs, it is difficult for him to know how much money any given school requires or which schools are in greatest need. In other words, he needs to know how much money he should give and to whom he should give it. The answer to this question requires detailed knowledge of the entire medical education field. The Fund, through its close working relationship with doctors and educators, can make these decisions; it can insure that the donations of business and industry will be spent wisely and to the greatest advantage of everybody concerned. Thus, in addition to convincing businessmen of the great need for giving our medical schools financial support, the Fund can actually help industry "invest" its donations in the soundest possible manner.

Widespread publicity, of course, is an essential part of the Fund's activities in attaining its goals. We have made a good start in that direction. The Fund last year issued a number of pamphlets, as well as its monthly bulletin *The Medical Advance*. It also inaugurated a series of regional meetings of its medical advisory committee, in addition to the meetings of the Committee of American Industry, which Mr. Colby M. Chester held in major cities across the country.

These are just some of the means we are employing to awaken business and industry to the advantages of supporting medical education and to create a stronger bond between medicine and industry. In partnership with medical educators and practitioners we can secure the financial support necessary to continue the high standards and progress of medical education that mean better health and better living for all in America.

THE LEISURE CORNER

THE JOYS OF BOOK COLLECTING

Books have at all times exerted an influence on the lives of physicians—as exacting taskmasters during undergraduate medical school days, as sources of lighthearted entertainment and means of escape from the rigors and trials of medical practice, or as serious accomplices in the nurturing and broadening of intellectual interests. For an active minority of book-minded physicians, however, book collecting is a joyful hobby because there is no greater financial expenditure than that entailed by casual book buying, the procedure being less a matter of money than of method and taste.

One of the pleasures indigenous to book collecting has to do with the search for books in out-of-the-way nooks and corners. It is claimed, for instance, that few thrills equal the discovery of a book that has been long sought. The search for an elusive volume is a pastime or a passion and has all sorts of happy gradations in between. This pleasure does not end with the successful conclusion of the hunt. The printed work that is introduced into a collection or library will, from the time of actual discovery and purchase, continually remind the hobbyist of the circumstances under which the book was obtained. Indeed, it is most likely that the ardent book collector will from then on regale those who are willing to listen with the details of where and how the treasure was found. Unlike some unverifiable flights of imagination and tall tales indulged in by a breed of irrepressible fishermen and golfers, stories about books usually have an air of credibility.

Although fashions change in book collecting as they do in paintings, automobiles, and clothes, the physician who pictures himself as an individualist has almost limitless opportunities to express his personality and to exercise distinctive taste and choice in the selection of books. He can choose any of a number of fascinating bypaths in a garden of books rather than a well-worn, tired track; trail blazing is oftentimes an adventure replete with freshness and novelty although occasionally a way and a means to benefit the pocketbook. For one reason or another, most physicians are attracted to a particular subject or author. Many small but cherished book collections are based on hobbies or special interests. Once the decision has been made to start a collection, the book-hobbyist should try to learn all he can about the subject or author in whom he is interested; he should speak to various booksellers about his intended collection and about what the books are likely to cost. Almost all booksellers enjoy such discussions and they can be very helpful in outlining a plan of action.

The novitiate in quest of subjects or authors as a basis for a book collection is literally confronted by a world of diverse themes. He can, for example, base his newfound hobby on science fiction, a rapidly expanding field that has interested many physicians; on detective stories and mystery stories in which medicine plays a leading role; on first editions of textbooks dealing with medicine, surgery, obstetrics, or any of the specialties; on books of fiction or poetry written by physicians; or on some important living writer of fiction such as James T. Farrell, whose characters are powerfully depicted in health and disease. Astute book collectors currently realize that Farrell's novels and short stories occupy a more significant place in American life and literature than has been generally recognized. His "Studs Lonigan" and the "Danny O'Neill" series are now regarded as classics. While some physicians limit their book-collecting interests to specialized subjects, other strive to collect items of a miscellaneous nature, creating the kind of book collection for which Horace Walpole has coined the word "serendipity." This means gathering diverse writings, which are collected for no other reason than that they have a broad appeal to the hobbyist. For this type of collector, books are unbounded, unfettered, and uncluttered; he may purchase a book on chess one day, a book on guns the next, or a book on pugilism or tapestry, and so on.

Book collectors seek first editions for various reasons. In the case of some persons, it is frequently a matter of sentiment. The ardent first edition collector wants to own a book in the precise format in which it is first published or, as so often happens, a first edition has a special, personal appeal. Again, there are book collectors who actually feel that they cannot bear to be without a particular book and that it must be possessed as a permanent companion. Still other reasons given for collecting first editions are that such books represent the first printed thoughts of an author on a particular subject or that the book itself will presumably have unusual monetary value. Opinion is divided on the significance of the last point. Desmond Coke, a well-known English book collector and writer, has this to say: "Think nothing about values; still less about fashions; buy what you love, pay the price that things are worth to you and to you (probably) alone." This is a recipe worth having.

As a rule, it is best to think of a book collection in terms of prospective pleasure rather than in terms of rising cash value. This is not to imply that the monetary value of a book collection should ever be minimized, but, if at all times the concept of cash value dominates a book collector's outlook, it will do much to spoil the rather fine flavor that book collecting should have. If the physician who embarks on a course of book collecting regards his books purely and simply as an investment, it would probably be better for him to think of some other field of financial activity, government bonds for instance. On the other hand, if a hobbyist takes delight in books for their intrinsic literary value and if he exercises a reasonable degree of care and circumspection in their purchase, the chances are that his book collection will not only provide a source of constant pleasure but also some possibility of gradually increasing in monetary value. Wisdom pays extremely handsome dividends in the world of books, provided the book collector is willing and prepared to wait for them.

There are, of course, occasions when the book collector should make it a point to buy judiciously, avoiding overpayment while in the process of adding a prize to his collection. Conversely, there are times when it is necessary to act boldly and to spend liberally. The collector who has no decisive plan of action is likely to miss books that are essential for a well-rounded collection as well as the feeling of triumph that accompanies purchase of a book that is thought to be beyond one's reach. To be a really successful book collector, it is desirable to mix caution with boldness. A prospective book hobbyist is well advised not to be an incessant and persistent bargain-hunter, for this trait can defeat its own purpose. A reasonable book collector is always prepared to pay a fair price for a book that he requires for his collection. He will over a period of years undoubtedly obtain bargains, many of them, and they will become more frequent as his knowledge of an author or subject grows. It is only fair to add that a persistent bargain-hunter is only slightly less popular among booksellers than a persistent bargainer. The hard facts of the matter are that a bookshop is not a philanthropic institution, but a means of earning a livelihood for its proprietor.

Finally, a small group of book collectors exist who are interested in collecting rare books. As the name implies, a rare book is one of few in existence, either because of a small printing or because most copies of a first or subsequent editions have been destroyed. A rare book takes on added value if its contents have sustained the interests of readers over a period of time. Value is greatly enhanced if a book unmistakably bears the imprint of beautiful craftsmanship. Perhaps the most widely known rare book in the world is the Gutenberg Bible, which has been sold for more than $100,000. The overwhelming desire to obtain a rare book should sometimes be tempered by the need for understanding a fellow human being. Some book collectors enjoy the give-and-take of bargaining with a rare book dealer, for this provides the participants with a splendid opportunity to engage in a battle of knowledge and wits. Yet, even the rarest of books may not always be at the beck and call of a well-filled purse and a passion for possession.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Am. J. Diseases Children, Chicago

87:1-138 (Jan.) 1954

Food Poisoning in Infants Caused by Egg-Yolk Powder. H. Abramson, M. Greenberg, S. Plotkin and C. Oldenbusch.—p. 1.
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Pneumoencephalography in Children with Mental Defect and/or Cerebral Palsy: Clinicopathologic Study. N. Malamud and B. Garoutte.—p. 16.
*Congenital Pulmonary Stenosis with Intact Ventricular Septum. S. Gibson, H. White, F. Johnson and W. J. Potts.—p. 26.
*Uveitis in Children. S. J. Kimura, M. J. Hogan and P. Thygeson.—p. 40.
Esophageal Ulcer in Very Young Infants. B. H. Sullivan Jr., L. J. Geppert and R. F. Ranson.—p. 49.
Idiopathic Calcinosis Universalis: Report of Case in Child Treated with Corticotropin (ACTH) and Cortisone. R. B. Scott and M. R. DeLilly.—p. 55.
Follow-Up of Breast and Bottle Shy Infant. G. J. Feldstein.—p. 67.

Pulmonary Stenosis with Intact Ventricular Septum.—According to Gibson and associates congenital pulmonary stenosis occurs most frequently in conjunction with defect of the ventricular septum, overriding of the aorta, and hypertrophy of the right ventricle. In this syndrome, known as the tetralogy of Fallot, the stenosis practically always involves the infundibulum of the right ventricle, and the pulmonary valve may be normal. There is a less frequent type of congenital pulmonary stenosis, in which the ventricular septum is intact. Obviously, there can be no overriding of the aorta, but there may be a right-to-left shunt through the foramen ovale. The defects in the region of the pulmonary valve are different from those seen in the tetralogy of Fallot. 1. The infundibulum of the right ventricle is distended and shares in the high pressure that occurs in the main cavity of the ventricle. 2. The stenosis of the valve is characterized by thickening and fusion of the cusps, so that it appears as a dome-like structure protruding into the lumen of the pulmonary artery. 3. The pulmonary artery immediately distal to the valve is dilated. In both forms of pulmonary stenosis, surgery has produced dramatic improvement. The value of the shunt operation by the Blalock or the Potts-Smith technique in the tetralogy of Fallot has been amply demonstrated. In pulmonary stenosis with intact ventricular septum, pulmonary valvotomy as developed by Sellors and Brock is the operation of choice. The material presented in this paper concerns chiefly infants and young children in whom the clinical picture differs from that seen in older patients. At the Children's Memorial Hospital in Chicago the authors were able to study 45 patients believed to have pulmonary stenosis with intact ventricular septum. In 10 patients, all but 3 of whom were less than one year old, pulmonary valvotomy was not done, and all of these died and autopsy corroborated the pulmonary stenosis. The other 35 patients were subjected to pulmonary valvotomy. Eight of these were less than one year old at the time of operation; 6 were between 1 and 2 years of age, 9 were between 2 and 5 years, and the remaining 12 were between 5 and 15 years. There were 13 boys and 22 girls. Cyanosis was present in 28 of the 35 patients. In 11 it was noted during the neonatal period. Of the seven in whom no cyanosis was noted, all except one patient were beyond the age of 3 years. In the infants, there was usually a history of rapid respiration, frequently with more or less dyspnea. Severe paroxysmal dyspnea occurred in three. In the children who had begun to walk, all except three gave a history of diminished exercise tolerance. On physical examination, the heart was usually found to be more or less enlarged. A systolic murmur over the precordium was heard in every instance. The electrocardiogram revealed a right heart strain in all except four cases. High peaked P-waves, particularly in lead 2, were an almost constant feature. The anteroposterior roentgenogram revealed cardiac enlargement in all except seven patients, and the heart was usually globular in outline. The fluoroscopic examination revealed enlargement of the pulmonary artery segment in the anteroposterior or right oblique view in 30. An angiocardiogram was done in three cases to rule out an overriding aorta. Cardiac catheterization was performed in five cases, confirming the presence of hypertension in the right ventricle with low pressure in the pulmonary artery. Only one death occurred in the 35 children subjected to pulmonary valvotomy. In the 34 patients who survived the operation, the results were gratifying. The moment the pulmonary valve is opened the child becomes pink, and the heartbeat, which is often irregular and slow due to hypoxia and manipulation, assumes a normal rhythm. Observations over the three and one-half year period since this work was begun shows no lessening in the remarkable improvement that occurs immediately after operation. These patients have practically a normal exercise tolerance, and they seem well in every way.

Uveitis in Children.—In the course of a survey on uveitis being conducted by the staff of the Francis I. Proctor Foundation for Research in Ophthalmology and the Department of Ophthalmology, University of California Medical Center, a total of 810 cases of uveitis were surveyed; 47 of them, or 5.8%, were in patients under 16 years of age. They were studied as outpatients or hospital patients, and each was examined by at least one of the authors. Since many patients were referred because of suspected toxoplasmosis and most others for diagnostic opinion because of recurrence and/or special therapeutic problems, the series is highly selected. The records provided data on the medical, particularly the ophthalmological history, the results of the examination of the eyes, including slit-lamp biomicroscopy and funduscopy with pupils dilated; skin tests, including the tuberculin, Frei, toxoplasmin, coccidioidin, histoplasmin, and Brucellergin tests; serologic tests, including the Toxoplasma dye test, the Toxoplasma complement fixation test, Brucella agglutination and complement fixation tests, Q-fever complement fixation test, and the Kline and Kahn test for syphilis; neutralization test for toxoplasmosis; white blood cell count and differential count; sedimentation rate, and roentgen chest examination, and special films of joints, skull, and phalanges when indicated by the history of physical examination. There were 29 cases of posterior and 18 of anterior uveitis. Generalized uveitis was found in none of these children. An etiological diagnosis or a specific disease association was determined in 6 of the 18 cases of anterior uveitis. The diagnoses or associations ascertained in these six were heterochromic iridocyclitis, Boeck's sarcoidosis, syphilitic keratouveitis, traumatic iritis, brucella keratouveitis, and juvenile rheumatoid iritis. Of the 12 patients with anterior uveitis in whom the cause was not determined, 5 had iridocyclitis of the nongranulomatous type, which was acute in 4 and subacute in one. Three of these five had an allergic diathesis. Clearing of the eyes occurred in one of these simultaneously with the removal of a pet cat. The process was chronic in three patients who had the granulomatous type of iridocyclitis. In the remaining 4 of the 12 patients, the lesion was identified as cyclitis, because there was little reaction in the anterior chamber. Among the children with posterior uveitis, a presumptive diagnosis of toxoplasmosis was made in 10 of the 29 cases of chorioretinitis.

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Titles marked with an asterisk (*) are abstracted.

The chorioretinitis was active in only 7 of the 19 cases that could not be diagnosed etiologically; of the 12 healed cases, 3 were associated with strabismus. In the course of this survey six children were referred to the uveitis clinic who did not in fact have uveitis. Diagnostic studies showed four of them to have Coats's disease (exudative retinitis). The other two cases that presented a problem in differential diagnosis were examples of heredomacular degeneration without central nervous system involvement. The authors regard it as noteworthy that none of the cases reviewed here could be ascribed to tuberculosis, despite the widespread belief that tuberculosis is the major causative factor in the chronic forms of uveitis.

American Journal of Psychotherapy, New York

7:629-848 (Oct.) 1953. **Partial Index**

Aspects of Clinical Training in Psychotherapy. C. J. Sager.—p. 633.
Considerations in Selection of Patients for Short-Term Therapy. E. Pumpian-Mindlin.—p. 641.
Premenstrual Depression. A. Schick.—p. 664.
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American Journal of Surgery, New York

87:1-154 (Jan.) 1954

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Second Site Inguinal Hernia and Routine Transpubic Exposure. J. I. Knott.—p. 97.

Am. J. Tropical Medicine & Hygiene, Baltimore

2:949-1158 (Nov.) 1953. **Partial Index**

Studies in Human Malaria: XXXI. Comparison of Primaquine, Isopentaquine, SN-3883, and Pamaquine as Curative Agents Against Chesson Strain Vivax Malaria. W. C. Cooper, A. V. Myatt, T. Hernandez and others.—p. 949.
Korean Vivax Malaria. D. D. Hankey, R. Jones Jr., G. R. Coatney and others.—p. 958.
Clinical Study of Primaquine (S. N. 13,272) in Treatment of Malaria Among Miskito Indians of Nicaragua. A. D. Thaeler Jr., J. Arnold and A. S. Alving.—p. 989.
Further Study of Toxicity of Pyrimethamine (Daraprim) in Man. A. V. Myatt, G. R. Coatney, T. Hernandez and H. W. Burton.—p. 1000.
Some Interactions in Vitro of Endamoeba Histolytica and Single Species of Microbial Symbionts. C. W. Rees, H. D. Baernstein, L. V. Reardon and L. Phillips.—p. 1002.
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American Review of Tuberculosis, New York

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*Progress Report on Therapeutic and Toxic Effects of Combinations of Isoniazid, Streptomycin, and Para-Aminosalicylic Acid: United States Public Health Service Cooperative Investigation of Antimicrobial Therapy of Tuberculosis.—p. 1.
*Results of Treatment of 549 Cases of Tuberculous Meningitis. J. Lorber.—p. 13.
The Unhospitalized Tuberculous Patient. A. B. Robins, H. Abeles, A. D. Chaves and others.—p. 26.
After-History of Pulmonary Tuberculosis: I. Methods of Evaluation. E. B. Bosworth and D. W. Alling.—p. 37.
Combined Rest and Exercise in Treatment of Minimal Tuberculosis: Follow-Up Study of 1 to 30 Years. E. N. Packard and P. F. Flynn.—p. 50.
Daily Oxytetracycline (Terramycin) and Intermittent Streptomycin in Treatment of Pulmonary Tuberculosis: An Investigation of Administration of Two Grams of Oxytetracycline Daily. F. L. Miller, J. H. Sands, L. J. Gregory and others.—p. 58.
Streptomycin and Oxytetracycline (Terramycin) in Treatment of Pulmonary Tuberculosis. E. Rothstein and M. Johnson.—p. 65.
An Evaluation of Factors Affecting Alveolar-Arterial Oxygen Tension Gradient in Chronic Pulmonary Disease. L. L. Anderson, J. C. Bell and S. G. Blount Jr.—p. 71.
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Ulceration of Bronchial Stump After Resection for Tuberculosis. L. R. Roll.—p. 84.
Detection of Small Numbers of Tubercle Bacilli in Treated Specimens: Comparison of Mice, Guinea Pigs, and Artificial Media. D. F. Gray, B. L. Clarke and M. W. Mattinson.—p. 92.
On Quantitative Evaluation of Activity of Antituberculous Drugs in Experimental Mouse Tuberculosis. G. Cerlotti.—p. 104.

Chemotherapy of Tuberculosis.—From a study of chemotherapy applied to more than 1,600 patients with pulmonary tuberculosis, a preliminary report is presented on the results obtained in 461 patients who have been observed longest. The paper is, therefore, in the nature of a progress report. By random allocation these patients were divided among five treatment regimens; 91 were given 3 mg. of isoniazid per kilogram daily plus 1 gm. of streptomycin twice per week, 85 received 3 mg. of isoniazid per kilogram daily plus 10 to 12 gm. of *p*-aminosalicylic acid daily, 95 were given 10 mg. of isoniazid per kilogram daily plus 1 gm. of streptomycin twice per week, 102 received 10 mg. of isoniazid per kilogram plus 10 to 12 gm. of *p*-aminosalicylic acid daily, and 88 were given 10 mg. of isoniazid per kilogram daily plus streptomycin and *p*-aminosalicylic acid. The study was designed to compare *p*-aminosalicylic acid and streptomycin as partners for isoniazid, to evaluate the simultaneous use of all three drugs, and to determine the effect of increasing the dose of isoniazid. Only 335 of the 461 patients completed 20 weeks of treatment, while 126 did not and were, therefore, not used to measure the therapeutic effectiveness of the assigned treatment. Forty-six of the 126 patients failed to tolerate one or more of the drugs in the regimen to which they were assigned; isoniazid, at the 3 mg. per kilogram dose, was toxic for only 2 patients, 1% of 176 receiving this dose, and for 29 patients, more than 10% of 285 receiving the 10 mg. per kilogram dose; *p*-aminosalicylic acid toxicity appeared in 19 patients or approximately 7% of the 275 patients who received the drug; streptomycin toxicity was observed in 7 patients, or approximately 3% of 274 patients on streptomycin regimens. On each regimen, except 3 mg. of isoniazid per kilogram plus streptomycin, one patient died of tuberculosis during the first 20 weeks. The therapeutic effect of the drugs employed was measured by roentgenographic, clinical, and bacteriological comparisons of the five regimens. Tentative results indicated that isoniazid plus *p*-aminosalicylic acid is as effective as isoniazid plus streptomycin, that the simultaneous use of all three drugs is not superior to a combination of either isoniazid plus streptomycin or isoniazid plus *p*-aminosalicylic acid, and that, while the therapeutic effectiveness of isoniazid does not increase with increasing dosage, toxic reactions are much more frequent at the higher dose.

Treatment of Tuberculous Meningitis.—Lorber analyzes the results of treatment in 549 consecutive patients with tuberculous meningitis who were admitted to and treated at five large centers in England between 1947 and 1950. Adults and chil-

dren were treated at three centers and children only at the other two. The main treatment at all of the centers consisted of prolonged, combined, intramuscular and intrathecal administration of streptomycin. In general the daily intramuscular dose of streptomycin was 2 gm. for adults and 20 mg. per pound of body weight for children, in two divided doses, given for a minimum of four to six months and often for much longer periods, especially in patients who also had generalized miliary tuberculosis. The intrathecal dose of streptomycin varied from 25 to 100 mg. daily. The over-all two year survival rate of 101 patients admitted in 1947 was 31.6%, and of 448 patients admitted between 1948 and 1950 it was 49.3%. Later deaths were very rare. The most important factor was the stage of the disease on admission. Of 100 patients admitted between 1948 and 1950 in the early stage of the disease, 74% survived; of 198 patients in the intermediate stage 54% survived; and of 125 in the advanced stage, 24.8% survived. Patients without demonstrable miliary tuberculosis during life had an 8% better survival rate than those who had miliary tuberculosis in addition to the meningitis. There was no difference between the survival rates of patients in the age groups between 3 and 14 years and more than 14 years; but the prognosis for those less than 3 years of age was worse. This less favorable prognosis in younger children was partly due to delay in diagnosis. Forty per cent of all patients less than 3 years of age (188 cases) were in the advanced stage, but only 20% of the remaining 361 patients were in the advanced stage on admission. The 245 survivors were followed for two and one-half to six years. Seventy-five per cent of those admitted in the early stage, 60% of those in the intermediate stage and 40% of those in the advanced stage had no sequelae. The incidence of moderate or severe neurological sequelae was least among early cases (9%) and greatest among advanced cases (55%). In 14.7% of all the survivors, deafness was the only residual damage, and two-thirds of these were totally deaf. It is presumed that this complication was usually a consequence of the streptomycin treatment and was not caused by the meningitis. Survival figures are available for preliminary comparison from three of the five centers in which studies were continued in 1951 with the routine use of *p*-aminosalicylic acid and the more frequent use of intrathecal tuberculin as adjuvants to the streptomycin. Fifty-seven of the 89 patients who were admitted in 1951 survived for one year, representing a considerably improved over-all survival rate of 64%. The survival rate for early cases rose to 88%, for intermediate cases to 70.7%, but remained only 26% for advanced cases. Fifty-three (80%) of the 66 patients who were admitted fully conscious survived for one year.

Arizona Medicine, Phoenix

10:419-458 (Dec.) 1953

Reserpine and Alseroxylon Alkaloids of Rauwolfia Serpentina in Hypertension. T. Winsor.—p. 419.
Present Concepts Regarding Goiter. H. H. Davis.—p. 425.
The Nephrotic Syndrome. D. B. Manley.—p. 429.

Diseases of Chest, Chicago

25:1-120 (Jan.) 1954

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Diagnosis and Management of Pulmonary Embolism and Infarction. E. M. Goyette.—p. 15.
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Gastroenterology, Baltimore

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Hepatic Function Modified by Alteration of Hepatic Blood Flow. J. L. Bollman and J. H. Grindlay.—p. 532.
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Oral Glucose Tolerance as Test of Liver Function. T. J. Rankin, R. L. Jenson and M. Delp.—p. 548.
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*Esophageal Varices: Comparative Incidence of Ulceration and Spontaneous Rupture as Cause of Fatal Hemorrhage. N. H. Chiles, A. H. Baggenstoss, H. R. Butt and A. M. Olsen.—p. 565.
An Unusual Case of Jaundice in Patient with Sarcoidosis. G. Wagoner, D. G. Freiman and L. Schiff.—p. 574.
*Human Histoplasmosis: Disease with Protean Manifestations Often with Digestive System Involvement. H. J. Shull.—p. 582.
Clinical Aspects and Diagnosis of Schistosomiasis. H. A. Horstman Jr. —p. 596.
Diagnostic Accuracy in Gastric Ulcer. F. B. McGlone and D. W. Robertson.—p. 603.

Esophageal Varices: Cause of Fatal Hemorrhage.—The bleeding in hepatic cirrhosis arises in approximately 80% of the cases from varicose esophageal veins. Although the mechanism by which the varices form is well understood, the exact cause of hemorrhage from them has not been clarified. If the cause and manner in which the varices rupture were understood, an effective medical or surgical technique that would alleviate the underlying cause of hemorrhage could be devised. This report is based on gross and histological studies of specimens in 91 cases of ruptured esophageal varices in which hemorrhage led to death. The necropsies were done at the Mayo Clinic from 1922 to 1952 inclusive. The authors gained the impression that the primary pathological process that leads to hemorrhage from esophageal varices is increased hydrostatic pressure in some cases and ulceration of the mucosa in others. Ulcerative esophagitis is found commonly at necropsy, particularly in patients who are debilitated and who vomit considerably. Once a varix ruptures spontaneously and bleeds, the tear may be the starting point for an ulcer. The anemia that occurs after the hemorrhage, the lowered resistance to infection, and the action of gastric juice all may lead to the rapid development of esophageal ulcers that cannot be distinguished at necropsy from ulcers that were present prior to the hemorrhage and that were of primary importance in the erosion of a varix. The observations also suggested that increased hydrostatic pressure within the varix may result in impaired circulation and devitalization of the surface epithelium. The latter is then less resistant to regurgitated gastric juice or to trauma from particles of food; the complicating factor of ulceration then develops, which in turn causes further destruction of esophageal tissue and the wall of the varix. Thus it appears that hydrostatic pressure and ulceration are related so closely that they may be assumed to coexist in any case; consequently, any therapeutic procedure must be devised with both factors in mind. If an operation can be performed before ulceration develops, then any method that will alleviate the increased hydrostatic pressure may be sufficient. However, once ulceration has developed, not only the hydrostatic pressure must be decreased but regurgitation of gastric juice must be prevented or counteracted. Of the 91 cases investigated 11 were eliminated because the source of hemorrhage could not be found. In 31 of the remaining 80 cases, no evidence of ulceration was found and the varices were assumed to have ruptured spontaneously from increased hydrostatic pressure. In 45 cases ulceration was of sufficient degree to have been of primary importance in the perforation of the varix. In four cases it could not be determined whether rupture occurred spontaneously or was precipitated by ulceration.

Human Histoplasmosis: Involvement of Digestive System.—Most of the early reports on histoplasmosis dealt with the disseminated form of the disease, which has been uniformly fatal. More recently it has been demonstrated that a benign form of the disease exists, characterized by x-ray evidence of pulmonary calcification and positive cutaneous reactions to histoplasmin. Between these two extremes there occur other localized lesions that tend to heal, remain stationary, or are only slowly progressive and rarely fatal. The diagnosis of histoplasmosis depends on demonstration of the typical yeast-like organisms by the microscopic examination of tissue and also by stained smears or cultures of blood, bone marrow, sputum, stool, and exudate from ulcers. It should be borne in mind that cultures may take from four to six weeks to grow. Inoculation of suitable material into guinea pigs, rabbits, or mice may be useful. Supportive diagnostic aid may be obtained from the intracutaneous test and by determination of specific antibodies in the serum using the complement fixation test. Involvement of the digestive system in histoplasmosis has often been revealed by postmortem examination, when the digestive symptoms were not prominent. On occasion, however, the severity of digestive symptoms masks the picture of disseminated histoplasmosis, and the true nature of the gastrointestinal disorder is not recognized. This is demonstrated on the basis of two case histories. In one of these cases the causative organism was obtained by direct smear of the typical ulcers in the lower rectum and from biopsy of lesions seen on sigmoidoscopic examination. The method is suggested for routine employment in every patient suspected of having histoplasmosis of the intestinal tract. At his hospital (Vanderbilt University in Nashville, Tenn.) the author also observed several instances of a localized active lesion due to Histoplasma capsulatum. One of the frequent sites for such a localized nondisseminating process is in the digestive system at its proximal portion, the oropharynx. The history of one patient is presented to illustrate this process. A statistical summary of experience with human histoplasmosis, including ethyl vanillate therapy, at Vanderbilt University Hospital is also recorded.

Indiana State Medical Assn. Journal, Indianapolis

46:1223-1356 (Dec.) 1953

*Effect of Cobalt-Iron Therapy in Iron Deficiency Anemia in Infants. R. J. Rohn, W. H. Bond and L. J. Klotz.—p. 1253.
Migraine—To Date. M. Casper.—p. 1261.
Obstructive Lesions of Urinary Tract in Children. L. T. Rieger.—p. 1264.

Cobalt-Iron Therapy in Iron Deficiency Anemia.—The facts that the vitamin B_{12} molecule contains a cobalt moiety and that certain animal anemias are, in fact, a cobalt deficiency led to the assumption that cobalt exerted its hemopoietic effect through an in vivo synthesis of cyanocobalamin. Although this is true in certain animal species, it is not the case in man. This fact became evident when it was shown not only that cobalt had no hemopoietic effect in any of the human macrocytic or megaloblastic anemias, but that its effects were pronounced in those hypochromic anemias, in both man and animal, where cyanocobalamin was ineffective. The primary effect of cobalt, in therapeutic dosage, appears to be a specific stimulating action on the hemopoietic system. Rohn and associates recently reported the results of the administration of a cobalt-iron preparation to a group of 23 infants and children with well-authenticated iron deficiency anemia. In this paper they analyze clinical findings in these children and compare them with those of iron therapy alone in iron deficiency anemia of infants and children. They gave 0.6 cc. of the cobalt-iron preparation three times daily to infants and children with pure iron deficiency anemia. This dose provided approximately 45 mg. of elemental iron per day, as ferrous sulfate. Since this was relatively less iron, in comparable form, than was used as the basis for the proposed standards, any hemoglobin response greater than expected could not be ascribed to the iron administered, but would have to be due to the cobalt. The results of the comparison are sufficiently clear cut to leave little doubt as to the validity of the conclusions reached. Cobalt appears to be a powerful stimulant to erythropoiesis and to be able to maintain hemoglobin formation near the physiological maximum. The authors know of no other agent that will accomplish such an effect. The administration of cobalt and iron together seems to have significant advantages over the use of iron alone in nearly all cases of iron deficiency anemia in infants and children. In the doses used, the cobalt-iron preparation produced no signs of toxicity or undesirable side-effects. The treatment used by the authors was approximately equivalent in results to the transfusion of 1½ pints of blood weekly in adults.

Journal of Bacteriology, Baltimore

67:1-128 (Jan.) 1954. **Partial Index**

Comparative Metabolic Studies on the Genus Brucella: II. Metabolism of Amino Acids That Occur in Urea Cycle. H. S. Cameron and M. E. Meyer.—p. 34.
Relationship Between Vitamin B_{12} Oxidation Product and Sodium Chloride Toxicity for Lactobacilli. D. Hendlin and J. C. Wall.—p. 38.
Effect of Combinations of Antibiotics on Lysis of Staphylococcus Aureus by Penicillin. W. M. M. Kirby and J. M. Burnell.—p. 50.
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On Mode of Release of Tetanus Toxin from Bacterial Cell. J. L. Stone. —p. 110.
Simple Blood Medium for Determining Susceptibility of Mycobacterium Tuberculosis to Isoniazid (Isonicotinic Acid Hydrazide). M. S. Tarshis. —p. 117.

Journal of Investigative Dermatology, Baltimore

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On the Mechanism of Melanin Pigmentation in Endocrine Disorders. A. B. Lerner, K. Shizume and T. B. Fitzpatrick.—p. 337.
Comparison of Skin Color with Melanin Content. R. R. Gates and A. A. Zimmermann.—p. 339.
*Pemphigus and Other Bullous Dermatoses: Correlation of Clinical and Pathologic Findings. J. G. Brennan and H. Montgomery.—p. 349.
Influence of Hyaluronic Acid and Other Substances on Tensile Strength of Healing Wounds. H. Pinkus and E. T. Perry.—p. 365.
Lupus Erythematosus and Polymorphous Light Eruptions: An Experimental Study on Their Possible Relationship. M. M. Cahn, E. J. Levy, B. Shaffer and H. Beerman.—p. 375.
Studies on Ether-Soluble Substances on Human Skin: III. Effect of Sweat on Quantity of Ether-Soluble Substances on Skin. F. Herrmann, P. H. Prose and M. B. Sulzberger.—p. 397.
Studies on Mode of Action of Vitamin A. P. Flesch.—p. 421.
*Time-Dosage Relationship in Treatment of Treponemal Diseases with New Combination of Three Penicillin Salts: Laboratory and Clinical Basis for Effective Therapy. C. R. Rein, F. H. Buckwalter, C. H. Mann and others.—p. 435.
Studies on Action of *p*-Phenylenediamine on Living Cells. A. G. Matoltsy. —p. 447.
Epidermal Protease. G. C. Wells and C. Babcock.—p. 459.

Pemphigus and Other Bullous Dermatoses.—Of 508 patients with serious bullous dermatoses observed at the Mayo Clinic since 1907, in whom the presence of pemphigus in any of its forms was suspected and whose records were studied by the authors, true pemphigus was diagnosed in 426, while forms of so-called pemphigus not classified as true pemphigus were diagnosed in 82. Of the 426 patients with true pemphigus, 226 had pemphigus vulgaris, 51 pemphigus vegetans, 27 pemphigus foliaceus, 20 pemphigus erythematodes, 30 pemphigus of the mucous membranes without cutaneous involvement, 53 pemphigus of the oral mucosa only, and 19 pemphigus of the oral mucosa and conjunctivas only. Of the 82 patients with so-called pemphigus not classified as true pemphigus, 20 had chronic pemphigus, 25 shrinkage of the conjunctivas, 3 butcher's pemphigus, 6 pemphigus neonatorum, and 28 familial benign chronic pemphigus of Hailey and Hailey. An attempt was made to correlate the clinical and pathological findings, based on follow-up studies. Results showed that forms of true pemphigus, such as pemphigus vulgaris, pemphigus vegetans, pemphigus foliaceus, and pemphigus erythematodes, can simulate clinically other conditions of less serious prognosis and vice versa. The same was true in pemphigus of the mucous membranes, chronic pemphigus, and familial benign chronic pemphigus. Histopathologically, it was concluded that true

pemphigus, such as pemphigus vulgaris, pemphigus vegetans, pemphigus foliaceus, and pemphigus erythematodes, had definite features distinct from other forms of so-called pemphigus, such as chronic pemphigus and familial benign chronic pemphigus, and from other bullous dermatoses. It was not possible to differentiate pemphigus foliaceus from pemphigus erythematodes; differentiation among pemphigus vulgaris, pemphigus vegetans, and pemphigus foliaceus was possible. The benign course of the disease in those patients who did not show acantholysis and the fatal outcome in those who presented definite acantholysis and who died primarily of pemphigus, warrant reclassification of these cutaneous lesions.

Treatment of Treponemal Diseases with Penicillin Salts.—Single or multiple intramuscular injections of Panbiotic, a new combination of three penicillin salts, were given for assay studies to 94 hospital patients. A single dose of 2 cc. in aqueous suspension provides 300,000 units of potassium penicillin G, 300,000 units of procaine penicillin G, and 600,000 units of N,N'dibenzylethylene diamine dipenicillin G. Microbiological assay determinations indicated that higher and more prolonged blood levels are obtained with a single injection of 2 cc. of Panbiotic than with a single injection of 4 cc. of microcrystalline penicillin G jelled in oil with 2% aluminum monostearate, even though both contain 1,200,000 units of penicillin. Urticaria or other untoward reactions did not occur in any of the 94 patients. Studies are now under way in various parts of the world to evaluate this new triple penicillin preparation in the therapy of syphilis, yaws, and pinta. Preliminary clinical data are highly encouraging. Since an adequate amount of therapy can be administered in a single injection without fear of any increased evidence of serious untoward reactions, this type of penicillin preparation should be of special value in those countries in which the majority of patients with treponemal diseases must be treated with single injection schedules on an ambulatory basis in rural areas.

Journal of Nutrition, Philadelphia

51:469-644 (Dec.) 1953. **Partial Index**

Observations on Nutrition of Rhesus Monkeys Receiving Highly Processed Rations. D. V. Tappan and C. A. Elvehjem.—p. 469.
*Effect of Feeding DDT-Treated Alfalfa Hay to Swine and of Feeding Swine Tissues to Rats. L. E. Harris, J. R. Harris, F. L. Mangelson and others.—p. 491.
Further Evidence as to Possible Mechanism Involved in Growth-Promoting Responses Obtained from Antibiotics. R. L. Jacobs, J. F. Elam, G. W. Anderson and others.—p. 507.
Influence of Various Carbohydrates on Utilization of Low Protein Rations by White Rat: II. Comparison of Several Proteins and Carbohydrates. Growth and Liver Fat. A. E. Harper, W. J. Monson, D. A. Arata and others.—p. 523.
Vanderbilt Cooperative Study of Maternal and Infant Nutrition. W. J. Darby, P. M. Densen, R. O. Cannon and others.—p. 539.
Basal Metabolic Rate and Effects of Thiouracil Administration and of Thyroidectomy on Control and Vitamin B6-Deficient Rats. J. R. Beaton, J. L. Beare, G. H. Beaton and others.—p. 599.
Toxicity of Tri-o-cresyl Phosphate for Rats as Related to Dietary Casein Level, Vitamin E and Vitamin A. E. L. Hove.—p. 609.

Feeding of DDT-Treated Hay.—Although there have been many investigations on the toxicity of DDT and on its accumulation in the tissues of laboratory and farm animals, only a few experiments have been conducted to determine whether DDT is toxic to swine and whether the tissues of animals fed DDT are toxic to other animals or to humans. Harris and others fed DDT-treated alfalfa hay (and untreated hay for control) to 44 weanling pigs (22 of each sex). The pigs were fed until they reached market weight, approximately 210 lb. (95.2 kg.). DDT did not affect weight gain, and there were no gross pathological or microscopic changes in the livers or kidneys of the pigs. Weanling rats were fed raw fat, cured bacon, and cured shoulder from the pigs for 14 weeks. The DDT in the rat diets (dry basis) averaged 2.2, 2.3, and 5.3 parts per million for the raw fat, cured bacon, and cured shoulder diets, respectively. Under these experimental conditions, DDT did not influence either food consumption or gain in weight. Autopsies were carried out on each animal and histological studies were conducted on the livers and kidneys. All of the animals and tissues were normal.

Kansas Medical Society Journal, Topeka

60:1-60 (Jan.) 1954

Treatment of Diabetic Acidosis and Diabetic Coma. E. Tolstoi.—p. 1.
Management of Acute Laryngotracheobronchitis. H. L. Hickey.—p. 7.
Diagnosis of Lead Poisoning. J. L. Morgan.—p. 11.
Effects of Altitude on Pathogenesis of Tuberculosis. W. F. Casteen.—p. 16.

Maryland State Medical Journal, Baltimore

2:623-680 (Dec.) 1953. **Partial Index**

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SEMINAR: RECENT ADVANCES IN RADIOLOGICAL STUDIES OF THE VASCULAR SYSTEM

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Cystic Fibrosis of Pancreas. G. E. Gibbs.—p. 644.
Uses and Misuses of Antibiotics in Skin Diseases. I. Zeligman.—p. 647.

Metabolism, New York

3:1-98 (Jan.) 1954

Nature and Prevention of Local Skin Lesions from Insulin Administration: Observations on 100 Patients. M. Fabrykant and B. I. Ashe.—p. 1.
Serum Glucuronic Acid Levels in Diabetes Mellitus. A. Saltzman, W. T. Caraway and I. A. Beck.—p. 11.
Influence of Sulfur Amino Acid Deficiency on Cholesterol Metabolism. L. C. Fillios and G. V. Mann.—p. 16.
Fat Metabolism in Nephrotic Hyperlipemia. W. Heymann, L. W. Matthews, J. Lemm and others.—p. 27.
Antidiuretic Potency of Blood in Diabetes Insipidus. H. Croxatto, L. Bárnafi, R. López and F. Andrade.—p. 32.
Effect of Posterior Pituitary Hormone on Water Metabolism in Thiamine Deficiency. K. Guggenheim.—p. 44.
Nitrogen, Water and Electrolyte Metabolism on Protein and Protein-Free Low-Calorie Diets in Man: I. Water Restriction. M. Quinn, C. R. Kleeman, D. E. Bass and A. Henschel.—p. 49.
Id.: II. Adequate Water Intake. M. Quinn, C. R. Kleeman, D. E. Bass and A. Henschel.—p. 68.
Comparison of Anabolic Effects of Testosterone Cyclopentylpropionate with Testosterone Propionate. K. R. Crispell, W. Parson and R. Gahagan.—p. 78.

Military Surgeon, Washington, D. C.

114:1-78 (Jan.) 1954. **Partial Index**

An Evaluation of Pulmonary Features of Systemic Fungus Diseases. W. L. Craddock.—p. 5.
Neurosurgery in Military Medicine. W. M. Craig.—p. 21.
Recent Advances in Military Medicine. G. E. Armstrong.—p. 29.
Military Medicine of Future. L. Pugh.—p. 31.
Accident Prevention in Air Force. H. G. Armstrong.—p. 35.

New England Journal of Medicine, Boston

249:1045-1088 (Dec. 24) 1953

*Heparin Treatment of Patients with Angina Pectoris: Failure to Influence Either the Clinical Course or Serum Lipids. H. L. Chandler and G. V. Mann.—p. 1045.
Effects of Isoniazid on Patients with Tuberculosis and Mental Illness. B. Hunt and J. D. Wassersug.—p. 1051.
Mechanism of Syncope Associated with Chronic Auricular Fibrillation Without Evidence of Organic Heart Disease: Cure, After 10 Years, by Restoration of Sinus Rhythm with Quinidine. C. K. Friedberg and M. H. Edelman.—p. 1057.
Spontaneous Rupture of the Normal Esophagus. R. E. Alt, F. E. Bixby and R. J. Rowell.—p. 1060.
Liver Biopsy: II. Risk of Needle Biopsy. N. Zamcheck and O. Klausenstock.—p. 1062.

Heparin in Angina Pectoris.—An experimental test of heparin was done in 13 patients with angina pectoris. After an initial observation period of from one to four weeks, the patients were given biweekly injections of 10 cc. of a placebo solution, 5% dextrose in water. At some point after at least one week of placebo medication, a solution of 100 mg. of heparin dissolved in 10 cc. of water was substituted for the other. Each patient was asked to evaluate the daily improvement or deterioration of his condition, and a record was kept of the number of nitroglycerine tablets taken each day during the course of the experiment. Eleven of the patients got moderate to marked relief of their heart pain after the administration of the placebo, and the subsequent administration of heparin

did not influence their relief in any discernible manner. About 100 days of parenteral treatment was required for most of them to achieve maximal improvement. The intravenous injection of 100 mg. of heparin twice weekly in ambulatory patients for periods up to 151 days and for a total of 1,323 patient days was accompanied by no hemorrhagic disturbances or other untoward effects. This treatment had no persistent or cumulative effects on either the serum cholesterol or the serum S_f12-20 or S_f20-100 classes of lipoprotein.

New York State Journal of Medicine, New York

53:2551-2726 (Nov. 15) 1953

Management of Upper Extremity Amputee. J. Lawrence.—p. 2613.
Cysts of Semilunar Cartilage. P. Blanco, A. Marano and A. Postoloff. —p. 2621.
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Role of Surgical Approach in Treatment of Acute Hematogenous Osteomyelitis with Antibiotic Agents. J. Buchman and R. L. Fenton.—p. 2632.
Etiology of Slipping of Capital Femoral Epiphysis. P. J. Dulligan Jr. —p. 2643.
Reduction and Pinning of Slipped Femoral Epiphyses. D. R. Telson. —p. 2647.
Mobilization of Stapes to Restore Hearing in Otosclerosis. S. Rosen. —p. 2650.
Change in Major Causes of Death in Children and Infants as Observed at Children's Hospital, Buffalo, in Last Twenty Years. K. L. Terplan. —p. 2654.
Adenoma and Adenocarcinoma of Appendix. S. Tannhauser.—p. 2656.
Gynecologic, Cytologic, and Histologic Examination of Cervix in Apparently Well Women. F. W. Brason, S. Sanes and E. Friedland. —p. 2661.
Cholinesterase of Blood in Relation to Organic Phosphate Insecticides. N. C. Klendshoj and M. Feldstein.—p. 2667.
Amniotic Fluid Pulmonary Embolism. B. W. Juvelier and E. Sullivan. —p. 2669.
Mumps Meningoencephalitis Treated with Gamma Globulin. L. Odessky, I. Schiff, I. J. Sands and D. Spielsinger.—p. 2672.
Effect of Meteorologic Conditions on Asthmatic Patients. H. Markow and J. Reicher.—p. 2675.
Carcinoma of Skin, Therapeutic Aspects. J. J. Eller and W. D. Eller. —p. 2682.

53:2727-2902 (Dec. 1) 1953. Partial Index

Effect of Various Methods of Obstetric Pain Relief on Infant Mortality. L. M. Hellman and R. A. Hingson.—p. 2767.
Recent Fetal Mortality in Cesarean Section — Obstetric Viewpoint. R. Landesman.—p. 2772.
Fetal Salvage in Cesarean Section—Pediatric Viewpoint. D. M. Little Jr. —p. 2776.
Prematurity—Obstetric Viewpoint. A. F. Guttmacher.—p. 2781.
Prematurity—Pediatric Viewpoint. A. J. Vignec.—p. 2785.
Clinical Experience with Varidase in Osteomyelitis. J. M. Miller, H. Kirkpatrick Jr., J. L. Wooten and P. H. Long.—p. 2789.
*Difficulties in Diagnosis of Subacute Bacterial Endocarditis. S. Glotzer. —p. 2796.
Adenomas of Large Bronchi Visible Both on Bronchoscopy and Roentgenography. A. S. W. Touroff and G. P. Seley.—p. 2801.
Prolonged Clinic Study of Treatment of Hyperthyroidism. G. J. Freidman, H. R. Marcus and J. J. Vorzimer.—p. 2807.
Cardiac Cirrhosis. C. S. Johnson.—p. 2811.
Prevention of Low-Salt Reactions During Treatment of Congestive Heart-Failure with Mercurial Diuretics: Studies on Mercurial Diuretics, II. S. Waldman and L. Pelner.—p. 2815.
Fractures of Both Bones of Mid-Forearm. M. Gershman and R. Goodrich.—p. 2819.
Perirenal Air Insufflation by Paracoccygeal Retrorectal Route. F. L. Senger, G. R. Horton, J. J. Bottone and others.—p. 2823.
Bacitracin Solution as Instillation in Bladder Infection. H. Wechsler and E. J. Frishwasser.—p. 2831.
Oral Procaine for Musculoskeletal Pain. R. Klein and S. B. Harris. —p. 2832.

Difficulties in Diagnosis of Subacute Bacterial Endocarditis.—Criteria for the diagnosis of subacute bacterial endocarditis are a persistent fever, valvular lesions, embolic and vascular lesions, and the presence of organisms in the blood on culture. Glotzer is concerned with the relatively large number of patients with bacterial endocarditis in whom the disease is not recognized during life or in whom diagnosis is delayed so long that therapy remains ineffective. In order to learn the reasons for failure of diagnosis, he selected 12 from the records of autopsied cases of subacute bacterial endocarditis in whom a clinical diagnosis had not been made during life. Four of these records had to be discarded for various reasons. The remaining eight cases showed clinical pictures permitting their classification into three groups. The first group included three patients who were admitted with symptoms of cerebral disease. Subarachnoid hemorrhage, meningeal irritation, and intracranial lesions masked systemic, embolic, and cardiac lesions that might otherwise have been detected. The next group included two patients in whom pulmonary symptoms were prominent. Pulmonary involvement is extremely common in cardiac disease, and few cases terminate without some type of lung lesion. In the first of the two cases with pulmonary symptoms death was due to empyema of the lung with multiple embolizations. Even in retrospect, no clues point to subacute bacterial endocarditis, although one can speculate as to whether the previous pneumonias were embolic. The second patient had inactive rheumatic heart disease with a congenitally deformed pulmonary valve and an engrafted bacterial endocarditis. Bilateral bronchopneumonia was present with pulmonary infarction, giving a picture of primary pulmonary disease, which obscured the cardiac lesion. The third group includes those with predominant renal disease. Involvement of the kidney, particularly by diffuse glomerulonephritis in varying degrees, is quite common in subacute bacterial endocarditis, and the presence of this lesion, terminating in renal failure and azotemia, masked the subacute bacterial endocarditis in three of the patients presented by Glotzer. He admits that it would be impossible always to penetrate the clinical camouflage created by the predominant involvement of one single organ, such as the brain, the lung, or the kidney, but alertness will be rewarded. It will be advisable to institute treatment for bacterial endocarditis in every case in which the diagnosis is merely suspected or in which an unexplained fever is present for more than a week, particularly if a cardiac lesion preexists or if any of the usual manifestations of bacterial endocarditis are seen. Although isolation and identification of the organism is a valuable aid, once the suspicion of bacterial endocarditis has been aroused, no time should be lost before treatment is begun with adequate amounts of antibiotics.

North Carolina Medical Journal, Winston-Salem

15:1-52 (Jan.) 1954

SYMPOSIUM ON MYOCARDITIS

Salivary Gland Viral Carditis. W. M. Berton.—p. 1.
Isolated Myocarditis in Infants and Children: Report of Five Cases. T. N. Lide.—p. 6.
Myocardial Changes in Dermatomyositis: Report of Case. J. Mendeloff.—p. 15.
Myocardial Abscess: Case Report. T. B. Wilson.—p. 20.
Myocardial Fibrosis. O. Duque.—p. 21.
Tuberculous Myocarditis. B. F. Fetter.—p. 26.
Sarcodosis of Myocardium. L. W. Powell Jr.—p. 28.
How Safe is Spinal Anesthesia in Present Day Practice? C. R. Stephen, R. Martin and W. K. Nowill.—p. 33.

Pediatrics, Springfield, Ill.

12:593-704 (Dec.) 1953

*Effect of Aureomycin Treatment of Streptococcal Sore Throat on Streptococcal Carrier State, Immunologic Response of Host, and Incidence of Acute Rheumatic Fever. H. B. Houser, G. C. Eckhardt, E. O. Hahn and others.—p. 593.
*Serum Mucoproteins in Patients with Rheumatic Fever. V. C. Kelley, F. H. Adams and R. A. Good.—p. 607.
Incontinentia Pigmenti (Bloch-Sulzberger Syndrome). H. Bambridge. —p. 622.
Infantile Renal Acidosis. R. Lightwood, W. W. Payne and J. A. Black. —p. 628.
*Exstrophy of Cloaca. H. Swan and S. P. Christensen.—p. 645.
Studies of Terramycin in Premature Infants. F. J. Coodin.—p. 652.
Poliocidal Activity of Some Common Antiseptics with Special Reference to Localized Paralysis. H. K. Faber and L. Dong.—p. 657.
Diagnosis and Treatment of Patent Ductus Arteriosus in Infancy. P. Adams Jr., F. H. Adams, R. L. Varco and others.—p. 664.
Absence of Inferior Vena Cava. D. F. Downing.—p. 675.
Relationship Between Hemogram of Infant and That of Mother During Pregnancy. C. W. Woodruff and E. B. Bridgeforth.—p. 681.

Chlortetracycline in Streptococcic Infection.—Houser and coworkers report the effect of three different dosage schedules of chlortetracycline (Aureomycin) on the streptococcic carrier state, the immunologic response of the host, and the incidence of rheumatic fever in a controlled series of 2,044 patients with exudative tonsillitis or pharyngitis. Of the 2,044 patients

1,009 were treated with chlortetracycline hydrochloride and 1,035 who did not receive chlortetracycline served as controls. Of the 1,009 patients, 108 were given a total dose of 11 gm. of chlortetracycline over a period of six days (schedule 1), 622 received a total dose of 10.5 gm. over a period of five days (schedule 2), and 279 were given a total dose of 8 gm. over a period of four days (schedule 3). In all schedules chlortetracycline effected a reduction both in the number of patients who continued to harbor streptococci and in the quantity of antibody produced; the drug eradicated the Streptococcus from the oropharynx in a large number of patients and inhibited the formation of antistreptolysin. The degree of inhibition of antistreptolysin formation was directly related to the eradication of the streptococci from the oropharynx. The longest duration of the treatment with chlortetracycline, as in schedule 1, resulted in the greatest reduction in the carrier rate for the infecting type at follow-up examination; schedule 2 was slightly more effective than schedule 3. When bacteriological relapse occurred after cessation of chlortetracycline therapy, the degree of inhibition of antistreptolysin production was low. An illness classified as definite or possible rheumatic fever subsequently occurred in 20 patients who had been given chlortetracycline and in 29 who had received no treatment. Data collected on rheumatic patients indicated that when the interval between the onset of the observed attack of exudative tonsillitis or pharyngitis and the onset of rheumatic fever exceeded 35 days, an intervening streptococcic infection had occurred. Rheumatic fever developed in five patients in the treated group and in 20 in the control group within a 35 day interval. Chlortetracycline thus greatly reduced the subsequent occurrence of rheumatic fever. Chlortetracycline therapy of streptococcic infections was compared to penicillin therapy of such infections. It was shown that penicillin was more effective in eradicating streptococci, decreasing antistreptolysin formation, and preventing rheumatic fever. Penicillin, therefore, is the drug of choice.

Serum Mucoproteins in Patients with Rheumatic Fever.—A total of approximately 2,000 mucoprotein determinations were done on serum samples obtained from 340 patients and from 125 normal persons between the ages of 3 months and 33 years. Of the 340 patients, 91 had active rheumatic fever, 53 were convalescent from rheumatic fever, 38 had inactive rheumatic fever, 26 had Sydenham's chorea, and 26 were acutely ill with various diseases such as osteomyelitis, pneumonia, poliomyelitis, glomerulonephritis, periarteritis nodosa, juvenile rheumatoid arthritis. Of the 125 normal persons, 75 were children, and 50 were adults. Of the 91 patients with active rheumatic fever, 55 were treated with corticotropin (ACTH), 4 with cortisone, and the remaining 32 patients with standard measures including bed rest and moderate dosage of salicylates. The concentration of serum mucoprotein was consistently increased in patients with acute rheumatic fever and normal serum levels characterized the convalescent and inactive stages of this disease. In patients with untreated rheumatic fever as in those with rheumatic fever treated with bed rest and salicylates the concentration of mucoproteins in the serum appeared to be a useful index of rheumatic activity. Treatment of rheumatic fever with corticotropin or cortisone caused deviation of the elevated serum mucoprotein concentration toward normal, but hormone treatment had less effect on this "acute phase reactant" than on other objective indexes of rheumatic activity. After an initial decrease on institution of hormone therapy, a plateau was observed in the curve illustrating mucoprotein concentration in the patients treated, and that despite the apparent continuing effectiveness of therapy as evaluated by absence of symptoms, absence of C-reactive protein in the serum and persistently normal sedimentation rates. The possibility that maintenance of elevated mucoprotein levels during hormone therapy indicates persisting disease activity is suggested. The tendency to develop recurrent rheumatic symptoms after cessation of hormone therapy was correlated with concentration of mucoproteins in the serum and with the total duration of treatment. The authors do not propose that the serum mucoprotein determination is a specific test for rheumatic fever, but the persistence of normal serum mucoprotein levels on repeated determinations in a given patient may be used as evidence mitigating against the diagnosis of active rheumatic fever.

Exstrophy of the Cloaca.—The occurrence of exstrophy of the bladder with associated intestinal openings is reported in two baby girls and one baby boy. The three cases were remarkably similar in that the infants were premature and presented an extensive congenital abnormality involving bowel, urogenital tract, bony pelvis, and anterior abdominal wall. All three patients died and necropsies were performed. Microscopic evidence demonstrated that the portion of the bowel exposed was the area of fusion of small and large bowel (cecum) and that a distal (blind) segment of large bowel existed in each case. The term exstrophy of the cloaca is suggested as a simple term for a complex situation. Any satisfactory explanation of the anomaly must explain the interposition of cecum between a bipartite bladder; in the light of the authors' observations a reexamination of the embryologic development of these structures seems necessary and it is possible that theories regarding the development of the cloaca must be revised. A multiple stage surgical approach to the correction of this anomaly was given a trial in the baby boy; although failure was experienced because of partial dehiscence of a suture line with resulting peritonitis, the method is believed to be sound: Stage 1 is the attempt to restore continuity to the gastrointestinal tract by resecting the exstrophied portion of bowel and anastomosing the proximal small bowel end-to-end to the distal short pouch of large bowel. The distal end of the pouch is then brought out through the anal dimple as in usual repair of imperforate anus. The two patches of bladder mucosa are sewed together in the midline to reconstitute an anterior covering for the peritoneal cavity and to form a single exstrophied bladder. A year or two may be allowed to elapse before decision is made concerning the management of the urinary and genital tracts. The existing exstrophied bladder or a segment of bowel might be used for the creation of a urinary pouch or container.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

84:517-740 (Dec.) 1953. **Partial Index**

Serum Potassium and Prolongation of Q-T Interval of Electrocardiogram in Acute Myocardial Infarction. S. O. Krasnoff, A. J. Paul and E. P. Halpern.—p. 547.

Poliomyelitis Virus in Tissue Culture: VI. Use of Kidney Epithelium Grown on Glass. G. L. Morann and J. L. Melnick.—p. 558.

A Fibrinolytic System in Human Milk. T. Astrup and I. Sterndorff.—p. 605.

•Cutaneous Test for Rheumatic Activity in Children. M. M. Streitfeld and M. S. Saslaw.—p. 628.

Elaboration of Steroid Hormones by Surviving Adrenal Tissue Slices Obtained from Thermally Stressed Dogs. R. O. Brady, M. Walser and B. W. Agranoff.—p. 634.

Action of Shellfish Poison on Peripheral Nerve and Skeletal Muscle. M. Fingerman, R. H. Forester and J. H. Stover Jr.—p. 643.

Parallel Inhibition of Granulation Tissue by Cortisone, Hydrocortisone, Dibenamine and Banthine. M. Taubenhaus, M. Jacobson, J. V. Morton and R. Levine.—p. 646.

Therapy of Experimental Hydrazine Poisoning. V. V. Cole, D. L. Hill and A. H. Oikemus.—p. 661.

Influence of Colchicine on Form of Skeletal Muscle in Tissue Culture. G. C. Godman and M. R. Murray.—p. 668.

Influence of Cortisone on Nervous Tissue, Adrenal and Thyroid. B. N. Spirtos.—p. 673.

Antigenic Differences Among Strains of Newcastle Disease Virus. E. Upton, R. P. Hanson and C. A. Brandly.—p. 691.

•Poliomyelitis Virus Antibody in Different Lots of Human Serum Gamma Globulin. J. S. Youngner.—p. 697.

Potentiating Effect of Iproniazid on Pharmacological Action of Sympathomimetic Amines. E. C. Griesemer, J. Barsky, C. A. Dragstedt and others.—p. 699.

Rapid Colorimetric Method for Determination of Isonicotinic Acid Hydrazide in Blood Plasma. B. Prescott, G. Kauffmann and W. D. James.—p. 704.

Investigation of Serum Protein Patterns in Patients Undergoing Operation. C. Hoch-Ligeti, K. Irvine and E. P. Sprinkle.—p. 707.

Peripheral Assimilation of Fructose in Man. T. B. Van Itallie, M. C. Morgan, R. T. Cathcart and others.—p. 713.

Cutaneous Test for Rheumatic Activity in Children.—In their efforts to find more adequate diagnostic aids for rheumatic activity Streitfeld and Saslaw decided to follow up the work of Nassim and Banner who described the absence of a cutaneous hyperemic and/or edematous response to the topi-

cal application of a 5% water miscible cream containing the rubefacient, tetrahydrofurfuryl ester of nicotinic acid, in 5 patients with active rheumatoid arthritis. It appeared to the authors that the skin response to this drug might be of diagnostic value in rheumatoid fever. The skin response to topical application of a petrolatum (Vaseline)-lanolin ointment containing 5% tetrahydrofurfuryl ester of nicotinic acid was determined in 337 children, several months to 18 years of age. All skin tests were performed and interpreted by the authors without knowledge of the clinical diagnoses and estimates of rheumatic activity, which were made independently by clinical or medical observers. Thus the tests were done "blindly," those interpreting the responses being unaware of the diagnosis and the clinicians being unaware of the test results. Seventy milligrams of the nicotinic acid ester ointment was gently rubbed, by finger, with 35 circular strokes into an area 1.5 in. (3.81 cm.) in diameter on the volar aspect of the forearm about an inch above the wrist. A control ointment was applied in the same manner. The inunction with the ointment containing tetrahydrofurfuryl ester of nicotinic acid caused localized cutaneous hyperemia and/or edema ("typical" reaction) in normal subjects and those with congenital heart disease or nonrheumatic conditions. Twenty of 22 patients with active rheumatic disease failed to show this typical hyperemia or edema. Their response ("atypical") consisted of either blanching, failure to react, or barely perceptible hyperemia. Children in whom the rheumatic process was inactive and patients whose activity was suppressed by cortisone or aminopyrine gave typical reactions. The atypical response was observed in tonsillitis and streptococcic sore throat, as well as in rheumatic activity. The authors feel that many more subjects will have to be studied before final evaluation can be made as to the diagnostic value of this form of skin testing. The mechanism of this reaction, as well as the possible role of beta hemolytic streptococcic infection, are under investigation.

Poliomyelitis Virus Antibody in Different Lots of Human Gamma Globulin.—Neutralizing antibody content of seven lots of human serum gamma globulin against the three immunologic types of poliomyelitis viruses were studied in roller tube cultures of monkey kidney tissue. Antibody against the three immunologic types of viruses was found to be present in all lots tested.

Southern Medical Journal, Birmingham, Ala.

46:1147-1254 (Dec.) 1953

Forgive Us Our Debts. W. C. Jones.—p. 1147.
Federal Medicine: Its Impact on Medical Care of the American People. W. B. Martin.—p. 1151.
Recent Advances in Radioisotope Therapy. C. F. Behrens.—p. 1155.
Weber-Christian's Disease: Case Report with Autopsy Findings. D. B. Taylor, W. M. Monroe and W. L. Taliaferro.—p. 1163.
•Riedel's Struma and Struma Lymphomatosa (Hashimoto): Two Cases Presenting Microscopic Findings of Both Diseases Combined. T. J. Baker.—p. 1168.
Treatment of Frontal Sinus Infections and Eye Disturbance Secondary to Ethmoiditis. H. M. Goodyear.—p. 1171.
Hemoptysis. G. D. Taylor.—p. 1174.
Allergy in Ophthalmology. K. W. Cosgrove.—p. 1180.
Developing Problems in Pediatric Practice. P. A. McLendon.—p. 1183.
Elective Induction of Labor. W. C. Winn, H. H. Ware Jr. and E. C. Schelin.—p. 1186.
Anesthesiology Expands. A. J. Ochsner.—p. 1190.
Repair of Benign Bone Tumors. W. K. West.—p. 1191.
Further Observations with Use of Toluidine Blue in Bleeding. J. E. Holoubek, W. J. Hollis, E. F. Chanton and R. B. Langford.—p. 1192.
Responsibilities and Privileges of the Physiatrist. S. Mead.—p. 1197.
Spells. V. Kinross-Wright.—p. 1199.
Findings in Patients Suffering from Anxiety States Treated with Muscle Relaxant. L. S. Selling.—p. 1204.
Mental and Emotional Aspects of Allergy. K. B. MacInnis.—p. 1210.
Neurological Manifestations of Allergy. F. L. Leney.—p. 1214.

Riedel's Struma and Struma Lymphomatosa (Hashimoto).—Baker calls attention to the confusion in the classification of the various disorders of the thyroid, which are collectively referred to as thyroiditis. In this paper he is concerned with Riedel's struma and Hashimoto's struma lymphomatosa. He shows that most of the current literature leads to the conclusion that Riedel's struma and Hashimoto's disease are nonrelated pathological entities; however, there appears to be some questions as to whether this is entirely correct. Certainly this is not always true. He presents the histories of two patients whose thyroids showed the characteristics of both diseases. On viewing certain areas in the microscopic sections of these thyroids a diagnosis of Riedel's struma is obvious, but, if other areas are studied, a diagnosis of Hashimoto's disease must be made. Certainly these two cases are not enough evidence to warrant a final conclusion that the two diseases are part of a single pathological process; but it does strongly support this theory, and, if other workers interested in thyroiditis find similar cases, they should be submitted for publication in order that the existing confusion may be ended.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

61:679-738 (Dec.) 1953

An Experimental Assay of Operative Procedures Used Clinically for Peptic Ulcer. E. A. Kanar and H. N. Harkins.—p. 679.
Intractable Ulcerative Colitis and Its Surgical Treatment. H. E. Bacon and H. D. Trimpi.—p. 688.
•Carcinoma of Juxtacardio-Esophageal Area. R. Wilson.—p. 691.
Tubal Sterilization Failure with Ruptured Tubal Pregnancy Complicating Therapeutic Pneumoperitoneum. J. Ross and J. E. Farber.—p. 695.
Recent Advances in Emergency Surgery. W. H. Snyder Jr. and L. Chaffin.—p. 697.
Testosterone-Cyclopentylpropionate Effects on Neutral 17-Ketosteroid Excretion in Normal Men. R. R. Commons.—p. 701.
Recurrent Hernia. E. B. Coulter.—p. 703.
Use and Abuse of Chest Drainage. B. B. Roe.—p. 706.
Dynamic Significance of Vaginal Lubrication to Frigidity. E. Bergler and W. S. Kroger.—p. 711.

Carcinoma of Juxtacardio-Esophageal Area.—Wilson had been alternately elated and despondent over his experiences with surgical excision of juxtacardio-esophageal growths, and so the following questions came to his mind. Does x-ray treatment do any good? Does gastrostomy increase survival? Will these persons live nearly as long, perhaps, if nothing at all is done? To answer these and other questions Wilson reviewed the records of 151 histologically proved cases of juxtacardio-esophageal cancers observed during the last 10 years in two hospitals. There were 124 men and 27 women. Over 100 of the patients were in the seventh and eighth decades. Reviewing survival times from the onset of symptoms to death and from the onset of treatment to death, the author found that gastrostomy added 3 months, x-ray treatment 4 months, and a combination of the two 10 months to the average survival time of 6.9 months from onset of symptoms to death when no treatment whatsoever was given. This would seem a short respite, when the psychological effect of tube feedings and the side-effect of irradiation are taken into consideration. When the length of survival of patients in whom resection was done was compared with that in patients subjected to palliative operations, it became apparent that the most successful operation directed at cure, that is, esophagogastrostomy, has, in those patients recovering from operation, added almost a year to the survival time from onset of symptoms and doubled the survival time from treatment to death, over those patients treated by gastrostomy, x-ray irradiation, or a combination of the two. In addition, there are six patients surviving from seven months to five years and two months from the date of operation. One survival over five years, with a possibility of one more also surviving this period, would seem a poor salvage rate from the curative point of view, especially when the operative mortality of between 38 and 50% is taken into consideration. Straight yes or no answers on whether the operation provided good palliation was almost impossible to obtain from the records. Not uncommonly, a patient relieved by operation from esophageal obstruction and impending death from inanition died several months later with intolerable pain from posterior parietal secondaries or recurrence of esophageal obstruction from local persistence of disease. However, it is difficult to deny patients immediate relief by surgery from complete obstruction. The author shows that the surgical technique could be improved and suggests that attention to caloric, blood, vitamin, protein, and salt requirements will diminish the surgical complications.

FOREIGN

Acta Medica Scandinavica, Stockholm

147:191-274 (No. 3) 1953. **Partial Index**

Inverted Nipples and Migraine. E. Ask-Upmark.—p. 191.
Intestinal Megloblastic Anaemia Treated with Aureomycin and Terramycin. M. Siurala and W. J. Kaipainen.—p. 197.
Disseminated Mycosis After Treatment with Antibiotics: Report of Two Cases Reaching Autopsy. L. Zettergren and B. Sjöström.—p. 203.
*Muscular Exercise in Essential Hypertension: Effect of Hexamethonium Chloride (C_6). B. Hood, S. Björk, G. Angervall and H. Rudbäck. —p. 213.
Results of Gastric Distension Test in Relation to Spontaneous Complaints of Patients and to Pathological Condition of Stomach: Experiments with 200 Cases. M. Lehtinen and M. Siurala.—p. 227.
Food Poisoning from Cod Roe Contaminated by Mustard Gas: Report with Five Case Histories. N. Hjorth.—p. 237.
Quantitative Estimation of Dyspnea. D. Gross.—p. 247.

Muscular Exercise and Treatment with Hexamethonium Chloride in Hypertension.—The changes in blood pressure during and after muscular exercise were studied in 24 patients with hypertension before and during treatment with hexamethonium chloride (C_6). Most of the patients had essential hypertension in the malignant phase or in the benign phase with excessively high blood pressure values. The type of exercise used was pedalling a bicycle ergometer with a fairly moderate load, 300 kg. per minute. After 20 to 30 minutes' rest in a horizontal position, the patient was put on the bicycle ergometer. Blood pressure and pulse were followed during a period of 10 minutes' pedalling and then for 15 minutes in the resting, sitting position. Then the patient was either put in the horizontal position or subjected to a new work period followed by another period in the resting, sitting position. The ergometer tests were usually performed as soon as an adequate dosage of the drug was reached by oral administration. Considerable lowering of blood pressure occurred during bicycling in patients under the effect of a clinically tolerable dose of hexamethonium chloride. This was apparent even in patients whose blood pressures in the horizontal position did not show any significant difference before and after the treatment. During treatment with hexamethonium chloride there also occurred a very pronounced and long-lasting drop in blood pressure of the patient in the sitting position after work. This after-work drop of blood pressure, if moderate, seems to be of possible benefit, but may represent a hazard if pronounced. In 6 of the 24 patients the bicycle test was repeated after the treatment with hexamethonium chloride had been continued for three months; the changes occurring in the blood pressure response to muscular work were at least as pronounced as those previously observed. The pulse rate during treatment with hexamethonium chloride did not increase as sharply as before, did not show a progressive rise during the bicycling, and dropped to the original level within about 15 minutes; before treatment with hexamethonium chloride the pulse rate had not been restored to the original level within 25 minutes after completion of the work. After having been in erect position but without performing any exercise the patients experienced a sharp rise of blood pressure on return to the horizontal position, an "overshoot" reaching its maximum in about three minutes. This finding is in contrast with observations made by other workers in patients after sympathectomy and after the intravenous administration of a large single dose of hexamethonium chloride, but a satisfactory explanation for this difference in effects has not been found. The authors believe that studies on the effects of agents intended to block neurogenic vasomotor influences should be performed under conditions by which these influences are brought into play as much as possible, rather than under basal conditions.

British Journal of Ophthalmology, London

37:705-784 (Dec.) 1953. **Partial Index**

Ocular Complications of Diabetes Mellitus. G. I. Scott.—p. 705.
Lens Extraction in Diabetic Patients. A. B. Nutt.—p. 725.
Ocular Manifestations in Löffler's Syndrome. C. M. J. Velzeboer.—p. 731.
Amyl Nitrite Test in Primary Glaucoma. G. Cristini and N. Pagliarani. —p. 741.
Small Voluntary Movements of Eye. B. L. Ginsborg.—p. 746.

British Journal of Radiology, London

26:609-664 (Dec.) 1953

Initiation and Development of Cellular Damage by Ionizing Radiations: Thirty-Second Silvanus Thompson Memorial Lecture. L. H. Gray. —p. 609.
Radiology of Soft Tissue: Preliminary Consideration of Basic Principles. L. Drey.—p. 619.
An Analysis of Radiological Findings in 20 Cases of Osteoblastic Osteogenic Sarcoma. J. H. E. Bergin.—p. 628.
Concentration of Oxygen Dissolved in Tissues at Time of Irradiation as Factor in Radiotherapy. L. H. Gray, A. D. Conger, M. Ebert and others.—p. 638.
Meckel's Diverticulum: Two Cases Diagnosed Radiologically. C. P. Moxon and R. Ollerenshaw.—p. 649.
*Hazards of Supplementary X-Ray Therapy in Radiation Treatment of Carcinoma of Cervix Uteri. M. A. C. Cowell.—p. 652.

Hazards of Supplementary X-Ray Therapy in Carcinoma of Uterine Cervix.—In a report presented in 1950, Cowell discussed the occurrence and incidence of radiation reaction in the rectum in three groups of patients treated by radium combined with x-rays. A series of patients treated only with radium was also described. The paper extends the information contained in the earlier report and surveys the incidence of reactions in the bladder and radiation fractures of the neck of the femur in the same groups of cases. In the described method of treatment of carcinoma of the cervix uteri by radium and x-ray fields to the whole pelvis, the incidence of radiation reactions was too high, although the survival rate at three years was satisfactory. An attempt was made to assess the dose that resulted in sporadic radiation fractures of the femur. The author concludes that the use of large field supplementary x-ray treatment by obliquely directed fields, resulting in a large volume of the pelvis being irradiated with the superimposition of radium and x-ray dosage at the center, is dangerous and should be abandoned.

British Medical Journal, London

1:55-108 (Jan. 9) 1954

Spontaneous Hyperinsulinism Due to Islet-Cell Adenoma. K. O. Black, R. S. Corbett, J. P. Hosford and J. W. A. Turner.—p. 55.
*Invasion of Internal Mammary Lymph Nodes in Carcinoma of Breast. R. S. Handley and A. C. Thackray.—p. 61.
Spinal Epidural Abscess. A. Hulme and N. M. Dott.—p. 64.
Low Gametocyte Thresholds of Infection of Anopheles with Plasmodium Falciparum: Significant Factor in Malaria Epidemiology. R. C. Muirhead-Thomson.—p. 68.
Rheumatic Heart Disease Complicating Pregnancy. M. I. Drury, M. K. O'Driscoll, T. D. Hanratty and A. P. Barry.—p. 70.
Suxamethonium (Succinylcholine) Chloride and Muscle Pains. H. C. Churchill-Davidson.—p. 74.
Acute Toxic Hypoglycaemia in Vomiting Sickness of Jamaica. D. B. Jelliffe and K. L. Stuart.—p. 75.
Congenital Absence of Both Kidneys: Report of Four Cases. P. E. Sylvester and D. R. Hughes.—p. 77.
Use of Unsaturated Fatty Acids in Eczemas of Childhood. J. H. S. Pettit. —p. 79.

Internal Mammary Lymph Nodes in Cancer of the Breast.—Of 150 women with carcinoma of the breast on whom biopsy of the internal mammary lymph node chain was carried out, 139 had been judged on clinical grounds to be operable; in the remaining 11 the biopsy suggested that the cases were inoperable. In 41 (29%) of the 139 patients, invasion of the internal mammary lymph node chain by carcinoma was observed on microscopic examination. Of the 11 inoperable patients 8 showed invasion of the chain. Invasion of the chain was three times as frequent when the primary growth was situated in the inner half of the breast as when it was in the outer half. Biopsies of the internal mammary lymph node chain in patients with primary growths in the inner half of the breast and metastasis in the axillary lymph nodes showed invasion in over two-thirds of the cases. The internal mammary chain was invaded in eight patients without involvement of the axilla. The 150 patients were divided into three groups on pathological grounds (but ignoring internal mammary biopsy findings) according to whether the carcinoma was confined to the breast (stage 1—57 patients), had not spread beyond the limits of the standard radical mastectomy (stage 2—85 patients), or had spread beyond these limits (stage 3—8 patients). The 85 in stage 2 were reduced by the internal mammary biopsy findings to a mere 52, and those in stage 3 were

increased from 8 to 49. Of the 150 patients, 75 had the biopsies taken three or more years ago, 24 of the 75 had all nodes free, and 22 of these are alive and well; of 24 whose axillary nodes were invaded, 18 are alive and 5 of these have recurrences; of 23 with internal mammary and axillary nodes invaded, 8 are alive (3 with recurrence). A striking and apparently contradictory result is that the remaining four patients who had only internal mammary lymph nodes invaded, all are alive and well. It may be that what was intended only as a biopsy was, by lucky chance, an effective therapy in an early internal mammary invasion.

Bruxelles-Médical, Brussels

33:2627-2674 (Dec. 27) 1953. **Partial Index**

Late Results of Surgical Treatment of Basedow's Disease in the Child. H. Welti and J. Landolt.—p. 2637.
*Radiological Diagnosis of Death of a Fetus in Case of Triple Pregnancy, at Six and One-Half Months. J. P. Pundel.—p. 2649.

Radiological Diagnosis of Death of a Fetus in Triple Pregnancy.—Radiographs made after six and one-half months of pregnancy in a 30-year-old woman showed three fetal skeletons, one of which presented compression of the spinal column and overriding of the cranial bones. Auscultation of the fetal heart sounds revealed two points of greatest intensity, but it was not possible to detect any difference in rhythm. The pregnancy continued without disturbance, except for an attack of pyelitis one week after the radiological examination; this was controlled by the standard means. The patient was very thin, weighing only 64 kg. (for a height of 1.8 m.). There was a pronounced abdominal distention caused by enlargement of the uterus that pushed the diaphragm upward and resulted in a painful outward curvature of the xiphoid process. Labor, which began two weeks before term, was slow and difficult. The first infant was successfully delivered, but the dead fetus and the third infant were interlocked. It was necessary to disengage them under general anesthesia with the patient in the Trendelenburg position. Delivery of the third infant followed extraction of the macerated fetus. All three were boys. Remnants of three amniotic membranes were found on examination of the placenta, immediate expulsion of which was secured by the intravenous injection of 5 units of pituitary extract. The postpartum period was uneventful except for a slight hemorrhage on the third day, which was readily controlled by methylergonovine (Methergine) given intramuscularly. The two living infants, both of whom did well and are healthy, weighed 1.9 and 2 kg., respectively, at birth.

Deutsche medizinische Wochenschrift, Stuttgart

79:69-100 (Jan. 8) 1954. **Partial Index**

Pain in Nape of the Neck and in Occiput. K. J. Zülch and E. E. Schmid.—p. 69.
Acetylcholine-Neostigmine Test in Diseases of Abdominal Organs. K. Weithaler and W. Odwarka.—p. 73.
Interstitial Pneumonia, an Infectious Disease of Premature and Dystrophic Infants with a Predisposition Depending on Age. W. Kosenow.—p. 75.
*Treatment of Bronchial Asthma with Cortisone. O. Kühne, P. Schmidt and E. Kania.—p. 78.
*Treatment of Hyperemesis Gravidarum with Adrenal Cortex Hormones and Corticotropin (ACTH). H.-J. Staemmler.—p. 84.

Cortisone in Bronchial Asthma.—Selye's concept of bronchial asthma as an adaptation syndrome and the satisfactory results obtained with corticotropin and cortisone in bronchial asthma by American and German workers induced the authors to use cortisone alone or combined with fever therapy for the treatment of 25 men and 15 women between the ages of 27 and 74 years with bronchial asthma. Of the 40 patients, 13 were treated with cortisone and fever therapy by means of a turpentine abscess, 14 with cortisone and fever therapy by injections of milk or a mixture of nonpathogenic fever-producing bacteria in isotonic sodium chloride solution (Pyrifer), and 13 with cortisone alone. Cortisone was administered in doses of 25 mg. four times daily for five successive days. Depending on the severity of the condition, up to 200 mg. of the drug was given daily with a total dose up to 1.5 gm. Combined treatment with cortisone and fever therapy was based on the concept that nonspecific stimulation therapy in the form of artificial fever may make possible the use of smaller doses of cortisone and that the effect of the combined treatment would be similar to that of massive doses of cortisone. The combined treatment was practiced particularly in patients in status asthmaticus and in those with severe continued asthmatic spasm. Complete clearing of the lungs occurred in 30 (75%) of the 40 patients who did not respond to previous symptomatic treatment and whose asthmatic attacks had become progressively worse. The lungs of seven additional patients (15%) showed considerable improvement. Results of the combined treatment with cortisone and turpentine abscess-fever therapy were particularly gratifying, since 12 of the 13 patients became free of attacks, and one was considerably improved. Only 3 of the 40 patients were therapeutic failures. Of 15 patients who were followed up for six months, 9 had recurrences after six weeks, 2 after 24 hours, 4 remained free of attacks for three months and 2 for six months. The tendency toward attacks was reduced and the attacks were less severe in the patients with recurrences. The satisfactory results of cortisone therapy reported in the literature were thus confirmed by the authors' results, but the fact that in many patients the improvement was only temporary suggests that the state of allergic reaction remains unchanged and that the drug only reduces or suppresses the acute manifestations. Hypofunction of the adrenal cortex demonstrated by the occurrence of eosinophilia (Thorn test) is an indication for substitution therapy with cortisone, while better results may be expected from corticotropin (ACTH) in patients with eosinopenia. Combined therapy with both drugs is possible and is required for prolonged treatment because of threatened adrenal cortex atrophy. For the purpose of strengthening the improvement obtained with cortisone and for the removal of "emotional stress," a sojourn in allergen-free surroundings, at an altitude of more than 4,500 ft. (1,350 m.), is recommended.

Adrenal Cortex Preparations and Corticotropin in Hyperemesis Gravidarum.—Insufficient adaptation of the adrenal cortex to the additional load placed on the organism of the pregnant woman causes metabolic disturbances similar to those observed in Addison's disease. The symptoms of pernicious vomiting of pregnancy may differ only in degree from those of Addison's disease. Quantitative chemical determinations of hormones excreted in the urine were done in 29 pregnant women with hyperemesis. At the peak of the disease, the urinary corticoid excretion showed on the average only 50% of the values observed in healthy pregnant women; the urinary corticoid excretion was restored to nearly normal on the patient's recovery. Satisfactory results obtained with adrenal cortex preparations and corticotropin in these pregnant women with hyperemesis support the concept of an insufficiency of the hypophysial-adrenal system as the essential cause of the metabolic disturbances in hyperemesis gravidarum. Synthetic desoxycorticosterone acetate was given as water soluble glucoside intravenously or in oily solution (Percorten or Cortiron) intramuscularly; 10 mg. of the oily solution was administered one or two times daily; later on one injection of 10 mg. was given every second day, or three to five tablets orally per day proved adequate. Urinary corticoid levels (from 900 to 1,000 mcg. in healthy women in the early stage of pregnancy) were used for the determination of the optimal dose of the hormones to be given. Control of the treatment was carried out with the aid of carbohydrate metabolism tests, determination of chlorine excretion, rest nitrogen, and liver function tests. The adrenal cortex extract Cortidyn in doses of 0.5 cc. on the first day and 1.5 to 2 cc. on successive days was used in patients with pronounced hypophysial-adrenal insufficiency who did not respond to desoxycorticosterone acetate. Treatment with corticotropin (ACTH) depends on a cortical parenchyma that is ready for stimulation. Tolerance tests with corticotropin (10 units three times per day, intramuscularly) showed a temporary rise of the corticoid excretion by about 100%; this reaction can be interpreted in the sense of a cortex with primary functional tendency. Corticotropin was administered first intramuscularly in doses up to a maximum of 40 units per day. Later on continuous drip infusions of 20 units of corticotropin in 1,000 cc. of 5% dextrose solution or three

to five slow intravenous injections of 2.5 to 5 units of corticotropin in 20 cc. of 20% dextrose with vitamin C and B were given daily. A repository corticotropin preparation, given intramuscularly in doses of 10 to 20 units daily, combined with vitamin B and C, proved particularly effective. The patients were placed on a salt-free, high protein diet. Considerable improvement resulted within the first few days of the therapy. Tendency to vomiting decreased, epigastric pain subsided, appetite increased, and general feeling of well being resulted. Treatment was discontinued when the patient had remained free from complaints for several days while rising from bed and taking walks. Recurrences were prevented by continued ambulatory treatment with adrenal cortex extracts and desoxycorticosterone acetate tablets. The intravenous corticotropin therapy and particularly the treatment with repository corticotropin seem to be superior to other therapeutic methods and deserve further trials.

Journal of Pathology and Bacteriology, Edinburgh

66:335-586 (Oct.) 1953. **Partial Index**

Hypertrophy and Hyperplasia of Pancreatic Islets in New-Born Infants. B. S. Cardell.—p. 335.
Experimental Study of Some Pressure Effects on Tissues, with Reference to the Bed-Sore Problem. T. Husain.—p. 347.
*Effects of Streptomycin, With and Without Para-Amino-Salicylic Acid, on Pathological Histology of Renal Tuberculosis. J. C. Dick.—p. 365.
Cytopathogenic Effect on Tissue Cultures of Herpes Simplex Virus. E. R. Bickerstaff.—p. 391.
Histopathology of Congenital Pneumonia: Clinical and Experimental Study. R. Barter.—p. 407.
Histogenesis of Brenner Tumours of Ovary. T. B. Teoh.—p. 441.
Niemann-Pick Disease in a Foetus. J. C. Burne.—p. 473.
Agglutinin-Production Test in Study of Pertussis Vaccines. D. G. Evans and F. T. Perkins.—p. 479.
Case of Intimal Hyperplasia of Arteries with Hypertension in Male Infant. I. M. P. Dawson and S. Nabarro.—p. 493.
Association of Serological Types of Bacterium Coli with Infantile Gastroenteritis. J. Smith.—p. 503.
Experimental Study of Mechanism of Action of Vibrio Cholerae on Intestinal Mucous Membrane. S. N. De and D. N. Chatterje.—p. 559.

Streptomycin With and Without *p*-Aminosalicylic Acid in Renal Tuberculosis.—Dick investigated the effects of streptomycin on the lesions of renal tuberculosis. The specimens were obtained by nephrectomy or partial nephrectomy. Of the total of 50 specimens examined, 37 were from patients who had not received any streptomycin or who were members of the control group, 9 were from 8 patients who had received at least one full course of streptomycin (90 gm. over 90 days), and 4 were from patients who had received one or two such courses of streptomycin, combined with *p*-aminosalicylic acid (15 to 20 gm. daily for 90 days). Operation had been performed in the streptomycin-treated patients only if tuberculous bacilluria continued after the course of treatment. Five-sixths of the specimens from patients who had received no drug showed acute caseating tuberculous granulation tissue in "open" cavity walls, while all showed acute lesions in the mucosa of calyx, pelvis, or ureter. Lesions due to secondary pyogenic infection were present in 34 of the 37 specimens. In the specimens from patients having been treated with streptomycin, the tuberculous lesions showed varying degrees of fibrosis, greater than corresponding lesions in the untreated lesions. Lesions in the mucosa of calyx, pelvis, or ureter showed less fibrosis than in the other areas, largely because of the development of streptomycin-resistant strains of tubercle bacilli, indicating that treatment with streptomycin alone was unsatisfactory in a proportion of cases. Reactivation of tuberculosis lesions might also result from secondary pyogenic infection. Tuberculous lesions in the specimens from patients who had been treated with streptomycin plus *p*-aminosalicylic acid showed as much greater a degree of fibrosis than after streptomycin alone as these lesions did compared with untreated specimens. Secondary pyogenic infection was not acute in any of these specimens. While neither of these treatment regimens proved completely successful and streptomycin alone leaves some patients worse off than before, the authors feel that these treatments represent a great advance in the control of tuberculous lesions and the best results were obtained with a double course of streptomycin plus *p*-aminosalicylic acid.

Minerva Medica, Turin

44:1661-1708 (Dec. 1) 1953. **Partial Index**

Pathogenesis, Prophylaxis, and Therapy of Coronaritis. G. Izar.—p. 1661.
Protein Picture, Nitrogen Metabolism, and Water Elimination in Two Cases of Nephrotic Syndrome Treated with Perfusion of Plasma. F. Penati, E. Pagliardi, A. Vitelli and G. Gaidano.—p. 1669.
*Some Aspects of Controlled General Hypothermia in Surgery on Bloodless Heart. P. Goffrini and E. Bezzi.—p. 1687.

Hypothermia and Surgery on Bloodless Heart.—The authors operated on the bloodless heart in 16 dogs in which they had induced hypothermia. They present their conclusions on drugs used to prevent or control the adrenergic reaction to cold, methods and speed of cooling and rewarming, degrees of hypothermia, and duration of the circulation arrest. They block the autonomic nervous system with a combination of gangliоplegics, antihistamines, and substances with a sedative effect on the hypothalamic autonomic centers, the nervous conduction, and the peripheral chemical effectors (Laborit and Huguenard method). The combination of these drugs potentiates the action of the usual anesthetics that can thus be given in smaller amounts. The body temperature is reduced gradually with an apparatus consisting of a refrigerator in which the fluid is kept at low temperatures and an absorbing mantle that is placed on the animal's body and through which the fluid is circulated by means of a speed-regulating pump. With this apparatus the quantity of heat subtracted from the body can be calculated at any time with a simple formula. The authors found that a loss of 4 C of heat per hour is satisfactory if administration of the above drugs is continued. Because of the meager knowledge about the phenomena induced by very low temperatures on the myocardium, the authors feel that hypothermia below 28 to 26 C is dangerous, even though survival and good results have been reported in animals subjected to lower temperatures. At this body temperature the circulation can be arrested safely by occlusion of the venae cavae for about 12 to 16 minutes without damage to the tissues that are very sensitive to anoxia. The few dogs in which the authors arrested the circulation for 20 minutes did not survive. As for the rewarming process, the authors restore the body temperature to 30 to 31 C abruptly and thereafter the normal temperature is reached very slowly (sometimes in 12 hours) while the autonomic nervous system is adequately treated. They feel that in so doing excess cardiovascular activity and increase of metabolic processes are avoided and postoperative shock is prevented.

Nordisk Medicin, Stockholm

50:1697-1730 (Dec. 10) 1953

*Chronic Cor Pulmonale in Pulmonary Tuberculosis.
I. Clinical Viewpoints. T. Bruce.—p. 1700.
II. Technique in Heart Catheterization with Occlusion on One Main Branch of Pulmonary Artery. H. E. Hanson.—p. 1703.
III. Electrocardiographic Reaction on Occlusion of One Main Branch of Pulmonary Artery. G. Malmström.—p. 1707.
IV. Value of Heart Catheterization. L.-G. Uggla.—p. 1708.

Chronic Cor Pulmonale in Pulmonary Tuberculosis.—Pathologists, Bruce says, have maintained that pulmonary tuberculosis not seldom leads to hypertrophy and dilatation of the right cardiac ventricle and atrium. With modern chemotherapy the problem of cor pulmonale has become more prominent. Many patients survive an acute toxic stage of pulmonary tuberculosis. The tuberculous changes regress toward healing by connective tissue formation, with emphysematous changes that gradually affect the heart. Most cases of chronic cor pulmonale in pulmonary tuberculosis arise in this way. Since collapse treatment reduces the capillary surface in the lungs, therapeutic measures can promote the development of cor pulmonale. In considering the indications for treatment attention should, therefore, be paid to the circulation and state of the heart. In doubtful cases the results of heart catheterization are often of decisive importance. Pneumothorax complicated by pleural effusion may cause fixation of the diaphragm and impairment of ventilation and pulmonary circulation. As far as possible the motility of the diaphragm and elasticity of the lungs must be preserved by thoracocentesis and physiotherapy. If thoracoplasty has been done, damage due to reduction of the respiratory surface must be controlled. Secondary scoliosis and deformity of the thoracic

cage must be prevented. Physiotherapy begun before the intervention and continued for some weeks afterward usually prevents any considerable scoliosis, provided the patient cooperates. The right side of the heart and the pulmonary circulation are accessible to examination by heart catheterization, but only the total circulation of the lungs is shown, not, what Hanson points out as more important in evaluation of the possibilities of operative treatment, that of each lung. Occlusion of one main branch of the pulmonary artery by a modified heart catheterization technique allows the function to be studied under conditions like those after pulmonectomy. Heart catheterization is complicated and occlusion makes it technically more complicated, but Malmström asserts that to date there is no electrocardiographic evidence that the hazards in occlusion according to Hanson exceed the normal risks in heart catheterization. Uggla concludes that pressure measurements at rest without occlusion are of limited value. Pressure measurements during moderate exercise give more certain information concerning the vascular bed and pulmonary reserves. Pressure measurement with occlusion of one main branch of the pulmonary artery can give added valuable information toward evaluation of the patient's ability to tolerate collapse therapy or resection and his chance to survive without chronic cardiorespiratory insufficiency. Spirometry and blood gas analyses cannot, separately or together, give clear and unequivocal information in these cases.

Presse Médicale, Paris

61:1668-1692 (Dec. 19) 1953. **Partial Index**

Epidemic of Poliomyelitis in 1952 in Copenhagen: 349 Cases with Respiratory Insufficiency and Paralysis of Deglutition. H. C. A. Lassen. —p. 1668.

New Facts in the World of Mycobacteria. P. Hauduroy.—p. 1670.

*Does Chlorophyll Possess a Deodorizing Effect? G. Bazille.—p. 1671.

Has Chlorophyll a Deodorizing Effect?—Chlorophyll has been said to have a deodorizing effect on a great variety of substances. It has been incorporated into products such as tablets, mouth washes, dentifrices, and chewing gum for the purpose of deodorizing the breath after smoking, eating, and drinking, especially when the beverages consumed are alcoholic. The presence of an alcoholic odor on the breath of a drinker is due to the fact that the alcohol is in part eliminated through the lungs without change. The odor of ethyl alcohol is a property of its molecule as characteristic as its molecular weight, its boiling point, or its specific weight and cannot be changed without destroying the molecule. Deodorization could be accomplished only if the chlorophyll taken orally destroyed the alcohol in vivo, which would make the drinker sober again and might not be to his liking, or if it prevented the elimination of the alcohol through the lungs, in which case the drinker's intoxication would be increased. Neither of these results has ever been reported, and the only controlled tests of chlorophyll that have been made indicate its worthlessness as a deodorant. Consumers are misled into believing in the deodorizing effect of chlorophyll preparations because they combat unpleasant odors with the odor of their excipients.

Quarterly Journal of Medicine, Oxford

22:405-524 (Oct.) 1953

Effects of General Anaesthesia, and Hexamethonium, on Blood-Sugar in Non-Diabetic and Diabetic Surgical Patients. J. A. Griffiths.—p. 405.

*Haematological and Nutritional Effects of Gastric Operations. J. Blake and P. A. Rechnitzer.—p. 419.

Effect of Diet and Regular Living Conditions on Natural History of Peptic Ulcer. J. W. Rae and R. S. Allison.—p. 439.

Systemic Lupus Erythematosus: Clinical and Pathological Study. S. C. Gold and N. F. C. Gowing.—p. 457.

Disturbances of Aminoacid Metabolism Following Liver Injury: Study by Means of Paper Chromatography. J. M. Walshe.—p. 483.

Effects of Gastric Operations on Blood and Nutrition.—The investigations described by Blake and Rechnitzer were carried out with a view to discovering the incidence and type of anemia and the frequency of undernutrition in 104 patients who had undergone partial gastrectomy, 65 subjected to gastroenterostomy, and 10 patients in whom total gastrectomy had been done. Iron deficiency anemia occurred in 20 of 50 men and in 24 of 54 women after partial gastrectomy. There was no evidence of anemia in the group subjected to gastroenterostomy, and only 2 of 10 patients in whom total gastrectomy was done had definite signs of iron deficiency anemia. Megaloblastic anemia occurred in one woman who had had partial gastrectomy, and in none of the gastroenterostomy patients. In three of the patients who had had total gastrectomy and who had a macrocytic anemia, marrow examination showed the presence of transitional megaloblasts. Three other patients who had had total gastrectomy also had a macrocytic anemia, but bone marrow examinations could not be performed in these three. Evidence of malnutrition (vitamin B deficiency) was present in 2 of the 50 men and in 3 of 54 women who had had partial gastrectomy, in none of the gastroenterostomy patients, and in three of 10 who had had total gastrectomy. Evidence of subnutrition appeared as loss of weight in 2 of 44 men and in 10 of 43 women who had had partial gastrectomy, in 1 of 46 men and in 1 of 13 women who had had gastroenterostomy, and in 5 of 10 who had had total gastrectomy. Subnutrition as shown by diminished working capacity in 8 of 50 men and in 20 of 54 women who had had partial gastrectomy, in 7 of 50 men and in 4 of 15 women who had had gastroenterostomy, and in 6 of 10 patients who had had total gastrectomy. The authors conclude that these undesirable sequelae are neither so severe nor so frequent as to contraindicate operation where it is therapeutically indicated.

South African Medical Journal, Cape Town

27:997-1020 (Nov. 7) 1953. **Partial Index**

Suggested Method of Rendering Butazolidin Less Harmful. J. Drummond and L. Atlas.—p. 997.

*Multiple Primary Self-Healing Squamous Epithelioma of Skin (Ferguson Smith) and Its Relationship to Molluscum Sebaceum. J. Marshall and G. H. Findlay.—p. 1000.

Multiple, Primary Self-Healing Squamous Epithelioma of Skin.—Marshall and Findlay recall that in 1934 Ferguson Smith reported the case of a young man with multiple, primary squamous cell carcinomas of the skin that healed spontaneously. The curious condition, characterized by the appearance over a period of years of numbers of squamous cell carcinomas of the skin that heal spontaneously and show no tendency to metastasize, has since then been observed by others; the total number of reported cases is now 12. To this number Marshall and Findlay add the case of a man of Italian ancestry, aged 42, who was born in South Africa. He was a truck driver and had never been exposed to tar, mineral oils, or arsenic. His skin was normal for his age, and he was not hypersensitive to sunlight. He had suffered for 2 years from recurrent ulcers of the face, neck, and forearms and presented himself because one of these ulcers, on his upper lip, was larger than usual and distressingly conspicuous. The lesion had appeared about six weeks before as a papule and had ulcerated and spread. When first seen by the authors, this lesion was a crateriform ulcer, 2 by 1 cm., with hard, red, elevated, and overhanging edges, a necrotic and keratotic indurated base, clinically indistinguishable from a squamous cell carcinoma. Apart from this ulcer there were 7 other lesions on the skin of the face, ears, neck, and forearms and 21 scars marking the sites of healed ulcers. The patient stated that the individual lesions always began as a papule, which grew rapidly, ulcerated in the center and healed with scar formation in from 2 to 4 months. The only treatment used had been applications of a popular deodorant cream. Two specimens were excised. One, an established lesion, came from the dorsum of the wrist. The second biopsy was from a growth below the elbow, which the patient thought had nearly healed. The microscopic aspects of these lesions are described. There are apparently three clinical types of spontaneously healing skin tumor in which the diagnosis of squamous carcinoma, grade 1, may be made microscopically: the solitary type, also known as kerato-acanthoma or molluscum sebaceum; the multiple form corresponding to Ferguson Smith's epithelioma, which is sometimes familial; and a third, in which hundreds of epitheliomas may be present. Inoculation of material from molluscum sebaceum failed to reveal a virus on developing hen eggs. The self-healing property of these tumors had received no satisfactory explanation, but it may be due to their derivation from the hair apparatus. The tumors are extruded after a time in the same manner as are hairs from a hair follicle.

BOOK REVIEWS

The Practical Management of Diabetes. By Edward Tolstoi, M.D., Associate Professor of Clinical Medicine, Cornell University Medical College, New York. Publication number 199, American Lecture Series, monograph in American Lectures in Metabolism, edited by Paul Gyorgy, M.D., Louis Leiter, M.D., and S. O. Waife, M.D. Cloth. $3.25. Pp. 93. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

This monograph might well be subtitled "A Defense of Glycosuria." Its tone is set by the opening quotation from Auenbrugger (1760), which concludes: ". . . it has always been the fate of those who have illustrated or improved the arts and sciences by their discoveries, to be beset by envy, malice, hatred, detraction and calumny." The author's purpose is to present observations based on his 15 years of experience and his conclusion that hyperglycemia and glycosuria of almost any degree are harmless as long as the patient is free of symptoms and does not have acetonuria. The development of this concept and its practical application in treatment are described in some detail and illustrated by several case reports. There follow chapters on the intercurrent illness, surgery, acidosis, pregnancy, the lower extremity, insulin, and, finally, the question of whether the usual complications of diabetes are related to hyperglycemia and glycosuria. Since quantitative diets are not employed except for weight reduction, there is no section dealing with diet calculation and there are no food tables. A bibliography of 70 references is appended.

At times the author's claims for the efficacy of his treatment are not borne out by the data offered to support them. In case 2 (page 20), for example, it took over nine months for the patient to get rid of his symptoms and begin gaining weight, glycosuria meanwhile being consistently 4+. Among the first group of pregnant diabetics managed by this method the incidence of toxemia was 46% and that of ketoacidosis 22% while infant mortality was 21.4%. There are a number of points at which therapy diverges, many will think unwisely, from accepted practice. Desired weight gain is regulated by insulin dosage rather than by food intake. The single reducing diet given is below standard in milk content. The routine administration of 200 to 250 ml. of orange juice every three hours on the day before an elective operation would be likely to cause intestinal irritation in some patients. Preoperative and postoperative insulin dosage is arbitrary and not sufficiently individualized. Use of a urinary antiseptic after catheterization is not mentioned. In so frankly argumentative a book the incomplete and sometimes biased citation of studies that point to the opposite conclusion is not surprising. The format and typography are excellent. The writing, while generally clear, leaves much to be desired in the way of style, sentence structure, and diction. The monograph is useful chiefly as a portrayal of a point of view with which most authorities strongly disagree.

Mental Health in the Home. By Laurence S. McLeod, Ph.D. Cloth. $3.50. Pp. 243. Bookman Associates; Twayne Publishers, 34 East 23rd St., New York 10, 1953.

This book is obviously written for the nontechnical person who is interested in happy, peaceful family living and the development of children with well-balanced personalities. It contains a minimum of technical material and scientific terminology. Though there is always the possibility of a disturbed person becoming more disturbed when he reads health literature that he is unable to apply to himself, many normal persons could probably insure their continued good adjustment to home and society by reading this book. It should provide nontechnical words and phrases for physicians that will make their explanations of mental health to their patients more intelligible. Physicians could use this book in their offices, if only to loan to their nonmedical friends who need a bit of friendly advice.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

Pregnancy Wastage. Edited by Earl T. Engle. Proceedings of conference sponsored by Committee on Human Reproduction, National Research Council, in behalf of National Committee on Maternal Health, Inc. Cloth. $8.50. Pp. 254, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

This book comprises a series of papers in which biologists, obstetricians, pathologists, and pediatricians express their views on the etiology and preventive treatment of fetal wastage. Much of the fundamental research on early pregnancy in man and the lower animals is presented. The endometrium is studied at the time of nidation, and various blighted ova are depicted in the earliest stages of development. Controlled experiments on gamete age at the time of fertilization in cattle are described. The metabolism of placental tissue, corticotropin, and pregnancy is evaluated, and there is evidence that pregnancy is associated with an increase in this hormone and that the placenta is the probable source. This, of course, could hardly be otherwise when we consider the relationship of this organ to other endocrine glands.

Young shows that in lower animals the age of the gamete is important for normal fertilization, nidation, and development. He bases this conclusion on a study of nidation of early embryos resulting from artificial insemination at various times after normal follicle rupture. The value and the limitations of maternal death studies based on health department statistics and hospital records in New York City is covered by Baumgartner and Erhardt, who also consider the significance of race and fetal development, sex ratio, and operative procedures, fetal and neonatal. Levine covers the role of isoimmunization in fetal wastage, considering the Rh factor as well as the A and B factors in this regard. Uterine contractility is studied by Csapo, with emphasis on its effect on spontaneous abortion, uterine inertia, and atony. Davis, Potter, and Bruce summarize the pertinent factors in the declining perinatal death rate at the Chicago Lying-In Hospital in the last 18 years.

The book is valuable for anyone interested in following any special phase of fetal wastage. Many tables are useful for teaching the basic concepts of this subject. The photomicrographs are excellent. The extensive bibliographies and the inclusion of discussions of the various subjects make this a valuable reference book.

The Medical Staff in the Hospital. By Thomas Ritchie Ponton, B.A., M.D. Revised by Malcolm Thomas MacEachern, M.D., C.M., D.Sc., Director of Professional Relations, American Hospital Association. Second edition. Cloth. $7.25. Pp. 373, with 58 illustrations. Physicians' Record Company, 161 W. Harrison St., Chicago 5, 1953.

Few aspects of hospital operation are quite as vital from the standpoint of the hospital administration as those associated with the work and organization of its medical staff. This volume, originally written in 1939 and now revised, represents an effort to perpetuate an important text dealing with the administrative aspects of the professional care of the patient in the hospital. Its object is to serve as a guide to those responsible for the organization and functioning of the medical staff.

The initial chapter deals with the governing body and medical staff of the hospital and their respective obligations. Subsequent chapters concern the physician in the hospital, selection and appointment of the medical staff, organization and bylaws of the medical staff, meetings, the medical staff and medical records, professional accounting and the medical audit, and the resident medical staff. Arguments pro and con are presented for such problems as "closed" and "open" medical staff organizations and the significance and value of the medical audit. Much of the value of this volume to medical readers lies in the excellent chapter on professional accounting. Dr. Ponton was a pioneer in the advancement of professional accounting and the medical audit. The basic principles laid down by him have not undergone material change even though the intervening years have witnessed improvements in methods of operation. Thus,

today the medical audit has become an important function of a well-administered, efficiently managed hospital and assures the patient of safer and better care.

The "Addenda" include such information as the essentials of approved internships, residencies, fellowships, hospitals, minimum standards for hospitals, medical staff bylaws for hospitals of different sizes, and a guide for resident staff procedures. An enormous amount of information of value to hospital administrators, medical staff members, and boards of trustees, in easily readable form, is to be found in this volume. It is recommended as a valuable reference meriting widespread distribution and study.

Physiology of the Eye: Clinical Application. By Francis Heed Adler, M.A., M.D., F.A.C.S., William F. Norris and George E. de Schweinitz Professor of Ophthalmology, School of Medicine, University of Pennsylvania, Philadelphia. Second edition. Cloth. $13. Pp. 734, with 329 illustrations. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1953.

The author is to be commended for producing a comprehensive book that offers recent findings on the physiology of the eye gleaned from laboratory experiments and correlating these facts, wherever possible, with their clinical application. There is much in the book that is of only theoretical interest to the physiologist or to the research student; the student of ophthalmology and the clinical ophthalmologist would profit, however, by reading the book in its entirety. A factor that is particularly desirable is the excellent bibliography at the end of each chapter.

The pathological physiology of strabismus is lucidly explained. The diagrammatic drawings simplify for the student a complex subject in ophthalmology. The section very graphically demonstrates the reasons for treatment and methods of treatment of conditions resulting in paralysis of the vertically acting muscles, which are the most difficult to treat. The explanations of the pharmacodynamics of the sphincter and dilator muscles and the neurohumoral (Scheie) theory are particularly worth while for the clinical ophthalmologist. A clear concept of this theory will simplify the understanding of clinical papers written on the subject. A synopsis of the recent theories concerning the rhodopsin (visual purple) contributes much to the comprehension of this phenomenon. A synopsis at the end of each chapter of the findings that have been confirmed and about which most physiologists agree, would crystallize in the reader's mind the positive aspects of the physiology of the eye.

Diseases of Women. By ten teachers under direction of Frederick W. Roques, M.D., M.Chir., F.R.C.S. Edited by Frederick W. Roques, John Beattie, and Joseph Wrigley. Ninth edition. Cloth. $6.50. Pp. 480, with 177 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; Edward Arnold & Co., 41-43 Maddox St., London, W.1, 1953.

This new edition of a famous book, which first appeared in 1919 under the guidance of Sir Comyns Berkely, includes contributions from Stanley Clayton, Calvert Gwillim, and Thomas Lewis who replace Clifford White, Sir William Gilliatt, and Frank Cook. The authors maintain that progesterone is of no use in the treatment of threatened abortion. Likewise, they state that the gonadotropic hormones have proved disappointing in the treatment of amenorrhea, threatened abortion, and endocrine menstrual disturbances. They emphasize that the results of stimulating doses of roentgen rays to the pituitary and the ovaries to restore ovulation and to increase the activity of the anterior lobe of the pituitary gland are variable. In the discussion on androgens there is no mention of buccal tablets. The chapters of the book vary greatly in length; one of them ("Displacement of the Ovary") occupies a few lines more than one page, while the chapter on "Operations" occupies 41 pages. Because of lack of space, all the operations are briefly described and illustrated, but the operations described under the headings "Radical Excision of the Vulva" and "Radical Abdominal Hysterectomy for Carcinoma of the Cervix (Wertheim's Hysterectomy)" are particularly sketchy. They do not belong in this book, which is chiefly for medical students and young practitioners. These two operations should only be performed by highly experienced operators. A large amount of useful data is presented in this book. The text is evenly written and not confused or contradictory. The advice given throughout the book is conservative and in accordance with sound gynecologic practice. The illustrations are numerous and instructive. The paper is sturdy and the type is legible.

Diseases of the Retina. By Herman Elwyn, M.D., Senior Assistant Surgeon, New York Eye and Ear Infirmary, New York. Second edition. Cloth. $12. Pp. 713, with 243 illustrations. Blakiston Company, Inc., 575 Madison Ave., New York 22, 1953.

The author has followed the rules of good pedagogy in that he has explained his basic terms, peristasis and prestasis, and then has used this concept to explain disturbances in circulation in an organ. He has then gone from the general to the specific in explaining disturbances in circulation within the retina, such as arteriosclerosis, occlusion of the central artery and its branches, and obstruction of the central vein. The newer concepts of essential hypertension as applied to the retina are particularly well explained and well illustrated with photographs. Fundus changes in diabetes are vividly portrayed with beautifully stained serial sections. In each chapter the author, after reviewing the recent theories, leads the reader to logical conclusions and stresses the fundamental pathological factor or factors in a disease; then he presents the clinical findings, the etiology, if known, and the treatment. He has done much to clarify the concepts of diseases with a hereditary basis and has furthered this clarification by his attempt to classify them. The author does not describe obsolete methods that are only of historical interest. This book should serve as an excellent source of information for the student of ophthalmology and an excellent reference for the clinical ophthalmologist and teacher.

Global Epidemiology: A Geography of Disease and Sanitation. Volume III: The Near and Middle East. By James Stevens Simmons, B.S., M.D., Ph.D., Dean and Professor of Public Health, Harvard University School of Public Health, Boston, Tom F. Whayne, A.B., M.D., M.P.H., Chief, Preventive Medicine Division, Office of Surgeon General, United States Army, Gaylord W. Anderson, A.B., M.D., Dr.P.H., Mayo Professor and Director, School of Public Health, University of Minnesota, Minneapolis, Harold Maclachlan Horack, B.S., M.D., Instructor in Medicine, Tulane University School of Medicine, New Orleans, and Ruth Alida Thomas, B.A., A.M., M.P.H., Research Associate, School of Public Health, University of Minnesota. Cloth. $12. Pp. 357, with illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1954.

This book is the third in a series that is not yet complete. Volume 1 covered India, the Far East, and the Pacific area; volume 2 covered Africa and adjacent islands. The present volume covers the Near and Middle East, specifically Cyprus, Iraq, Israel, Jordan, Lebanon, Syria, Afghanistan, Iran, Turkey, Aden, Bahrain, Kuwait, Muscat, and Oman, Qatar, Saudi Arabia, and Yemen. Each chapter contains maps and ends with a summary and bibliography. "Health Hints for the Tropics" is the title of the appendix. There is an index. This reference book will be of value chiefly in the event of future military operations. Commercial firms interested in establishing international branches would also find the information given here valuable.

Dictionary of Organic Compounds: Their Constitution and Physical and Chemical Properties of the Principal Carbon Compounds and Their Derivatives, Together with the Relevant Literature References. Editors-in-Chief: Sir Ian Heilbron, D.S.O., D.Sc., LL.D., and H. M. Bunbury, M.Sc., F.R.I.C. Editors: A. H Cook, D.Sc., F.R.I.C., F.R.S., and E. R. H. Jones, D.Sc., F.R.I.C., F.R.S. Assistant editors: T. G. Halsall, Ph.D., A.R.I.C., and J. R. A. Pollock, Ph.D., D.I.C. Volume I: Abadole—Cytosine. Volume II: D. A.—Hystazarin. Volume III: Ibogaine—NW-Acid. Volume IV: Obaculactone—Zymosterol. New edition. Cloth. $78 per set. Pp. 654; 845; 838; 694. Oxford University Press, 114 Fifth Ave., New York 11, 1953.

This dictionary gives for a number of important organic compounds their commonest chemical names, structural and empirical formulas, approximate molecular weights, appearance, solubilities, melting or boiling points, and short bibliographies. It has been expanded from three volumes to four, because 2,500 compounds not included in the second edition have been added. When first sent to the printer the text was up-to-date through the end of 1950. Additional material was introduced during the period of printing so that for some compounds the information is complete through 1952. Like the earlier editions, this one is printed handsomely on good paper and is bound sturdily. No trade names are given, and since the references are to papers giving the best method of preparation and proof of structure, organic chemists will be the chief users of this dictionary.

QUERIES AND MINOR NOTES

THE HEART "STRAIN" PATTERN IN THE ELECTROCARDIOGRAM

To the Editor:—*Please send information on the heart strain pattern in the electrocardiogram. Is it an expression of the coronary insufficiency (as Wolff believes it) or of hypertrophy (as Graybiel would think), or is it due to transient potassium deficiency (Goldberger)? My conferees and I on medical staff rounds have difficulty deciding just who is right. Some radicals deny its validity altogether, and the rest of us are profoundly disturbed.*

M.D., Massachusetts.

This inquiry was referred to two consultants whose respective replies follow.—Ed.

Answer.—An electrocardiogram that shows depression of RS-T and T waves in the left precordial leads is often interpreted as indicating left ventricular "strain." If similar changes are noted in the right chest leads, the diagnosis of right heart "strain" is frequently made. Such abnormalities in the electrocardiogram may appear when the left or right intraventricular pressures are elevated, but deviations in RS-T and T waves may be caused by a wide variety of physiological, pharmacological, or pathological factors and are therefore nonspecific. As noted in the question submitted, there is no general agreement as to the underlying mechanisms responsible for the heart "strain" pattern. Furthermore, there are no universally accepted electrocardiographic criteria on which to base such an interpretation.

Hypertrophy of the heart muscle alone is not a determining factor. For example, the pattern of right ventricular "strain" may appear immediately following pulmonary embolism before cardiac hypertrophy could occur. Similarly the pattern of "strain" of the left side of the heart may quickly disappear in hypertensive patients when treated by a variety of hypotensive agents during the period when the blood pressure has been reduced to normal levels and before any reduction of hypertrophy of the muscle could occur. Such rapid alterations in the electrocardiogram may be associated with lessening of myocardial ischemia, a shift in electrolyte concentrations within the heart muscle, or a variety of other factors. However, there is no proof yet of which is responsible.

Answer.—Although the implication that the heart muscle is overtaxed is not justified, the term "heart strain" has come to have a specific connotation in reference to a particular electrocardiographic abnormality. There is an increase in the voltage of the QRS complex, with an appropriate deviation of the electrical axis and displacement of the S-T waves away from the long axis of the QRS complex. There is often characteristic bowing of S-T waves with convexity toward the base line, and T waves are inverted. This represents an electrical syndrome, and the conditions that can produce it are numerous. No single clinical entity has been proved necessary and sufficient, and the only common denominator to the many possible explanations is the presence of an alteration of the ventricular gradient.

MOSQUITOES AND ENCEPHALITIS

To the Editor:—*Has it been definitely proved that encephalitis is carried by mosquitoes?*

George H. Sanderson, M.D., Stockton, Calif.

Answer.—It is now generally accepted that mosquitoes are the principal vectors of encephalitides caused by a group of viruses commonly designated as the "arthropod-borne viral encephalitides." Representatives in North America are the viruses of Western equine and Eastern equine encephalomyelitis and St. Louis encephalitis. Epidemiological investigations have led to the frequent demonstration of infection with the several viruses in certain species of mosquitoes in many parts of the United States. As an example, in the Western United States several hundred isolations of Western equine and St. Louis encephalitis viruses have been made from the mosquito Culex tarsalis collected in areas where these viruses are endemic. There is extensive experimental evidence of the ability of a number of species of mosquitoes to transmit these viruses by their bite.

All epidemiological evidence indicates that mosquitoes are the primary vector of these infections to the human host and under most circumstances the sole means by which these viruses are spread to man. It should be emphasized, however, that all species of mosquitoes are not vectors, and, in those areas where studies have been made, usually a single species is shown to be the primary vector, for example, in California the primary vector is Culex tarsalis.

HEMOCHROMATOSIS

To the Editor:—*A 49-year-old man has hepatomegaly, splenomegaly, diabetes, skin pigmentation, impotence, and a serum iron level of 248 mg. per 100 cc. He says he had severe malaria in 1940 and that his liver was enlarged from that time on. Can severe malaria cause chronic hepatomegaly with hemosiderosis even though there has been no clinical activity for 13 years? What further tests (exclusive of liver biopsy) could be done to differentiate hemochromatosis and hemosiderosis? What is the present status of treatment of hemochromatosis by phlebotomy, with discarding of the red blood cells and replacing of the patient's plasma? The diabetes is well controlled.*

M.D., Washington.

Answer.—The presented clinical data with the high serum iron level justify a presumptive diagnosis of hemochromatosis. Severe malarial infection in the past could well account for persistent splenomegaly, but it would be extremely unusual to have hepatomegaly persist for 13 years after such an infection. A liver biopsy showing considerable amounts of iron-containing pigment is the most certain procedure enabling one to confirm a presumptive diagnosis of hemochromatosis. The presence of significant amounts of iron-containing pigment in the chief cells of a specimen of gastric mucosa obtained by biopsy is almost as reliable for this purpose as a liver biopsy. The coexistence of hemosiderosis on the basis of one of the hemolytic diseases in the described patient is unlikely in the absence of anemia and of signs of a hemolytic process. Phlebotomy is at present the only method of treatment that can reverse the chief known mechanism by which lesions are produced in hemochromatosis, namely, excessive deposition of hemosiderin in various organs. The extent and duration of this beneficial influence of phlebotomy remains to be determined.

In a review of all published cases in which massive venesection was used for the treatment of hemochromatosis, Davis and Arrowsmith (*Ann. Int. Med.* **39**:723 [Oct.] 1953) reported that 12 out of 15 patients showed a satisfactory response. They recommend daily withdrawal of 500 cc. of blood until the hemoglobin level falls to between 10.5 and 11.5 gm. per 100 cc. and the hematocrit to 35%. Thereafter, phlebotomy should be done at intervals of four to eight days with the object of keeping the hemoglobin at the above level. It is advisable to return the removed plasma to the patient's circulation at the time of the next phlebotomy, although, even when this was not done in several cases, no difficulty due to hypoproteinemia developed. The presence of anemia is a contraindication to this form of therapy. In addition, aluminum hydroxide gel should be administered to reduce intestinal absorption of iron by raising the pH of the intestine.

Finally, the patient should be put on a high protein, high carbohydrate diet with supplements of yeast and a multivitamin preparation as in other cases of hepatic cirrhosis.

The absence of sulfobromophthalein (Bromsulphalein) retention is not surprising, since it has been shown by Althausen and associates (*A. M. A. Arch. Int. Med.* **88**:553 [Nov.] 1951) that the cirrhosis in hemochromatosis is relatively benign as compared with other types of cirrhosis in which there is a comparable degree of fibrosis.

TREATMENT OF TRACHOMA

To the Editor:—*Have any of the antibiotics been effective in the treatment of trachoma?*

Thomas R. Rees, M.D., Washington, D. C.

Answer.—There is abundant evidence that the broad spectrum antibiotics are effective in the treatment of trachoma. Most of the reported work has been done with chlortetracycline (Aureomycin) and oxytetracycline (Terramycin), topically applied, but chloramphenicol (Chloromycetin) has also been given clinical trial. A single report suggests that carbomycin (Magnamycin) may have antitrachomatous activity. The occasionally favorable effects of penicillin, bacitracin, and streptomycin are believed to be due to action on secondary invaders only.

Although a number of reports have claimed superiority for one or another of the broad spectrum antibiotics, it seems more likely that their effectiveness is about equal. The recent report of the Committee of Experts on Trachoma of the World Health Organization recommends the topical use of either chlortetracycline or oxytetracycline ointment four times a day or oftener for a minimum period of six weeks. In cases in which there is no response to this treatment, a combination of oral sulfonamide and topical antibiotic therapy was recommended. The results of the topical use of chlortetracycline and oxytetracycline ointments have been roughly comparable to the results obtained with sulfonamides orally and far superior to the results obtained with sulfonamide ointments topically. To be effective, the antibiotic ointment should contain at least 5 mg. of antibiotic per gram of ointment base.

EPIDIDYMITIS

To the Editor:—*Often in cases of acute nonspecific epididymitis, I obtain a history that the pain in the scrotum developed following a severe "strain." These patients frequently are industrial problems. I would like an authoritative opinion as to the relation of "injury" or "strain" to acute bacterial epididymitis of nonspecific origin.*

M.D., Oklahoma.

Answer.—The etiological factors involved in epididymitis have not been exactly determined. The theory is generally accepted that acute nonspecific epididymitis often occurs following severe "strain" or "injury." It is assumed that increased urinary pressure causes reflux of bacteria present in the urine into the epididymis via the vas deferens. This etiological factor seems to be present as a result of industrial injury or overexertion. On the other hand, acute epididymitis may also occur as a result of secondary infection carried to the epididymis either via the blood stream or the lymphatic system. Recurring epididymitis of this kind is sometimes best treated by surgical removal of the epididymis or by ligation of the vas. Epididymitis may occur also following transurethral resection if the prostatic tissue is incompletely removed.

DISCHARGING EARS

To the Editor:—*On occasion, one sees a recurrent middle ear infection with a large drum defect with which the principal annoyance to the patient is the foul odor of the transient discharge. Would 100% powdered chlorophyll (or admixed with some antibiotic or chemical therapeutic agent) be of any help?* *M.D., Connecticut.*

Answer.—To an otologist, the site of the drum defect would be the most important factor in determining the significance of fetor from an aural discharge. Ordinarily, a fetid secretion implies the presence of saprophytes, but, when combined with a perforation located marginally or in the attic region (Shrapnell's membrane), it is usually associated with cholesteatoma. Inasmuch as the majority of running ears have always responded to proper aural hygiene and the omission of aqueous mixtures to combat the discharge and the fetor, proper otoscopic interpretation is paramount so as not to jeopardize the patient's hearing or his life in overlooking the possible intracranial potentialities. All discharging ears call for a thorough investigation and treatment of the nose, sinuses, and nasopharynx as possible reinfecting sources. Properly conducted tests of hearing and x-ray studies are necessary in the general appraisal of whether medical therapy can be safely followed. Chlorophyll powder in the ear has no greater advantage than any of the numerous dusting powders that have been heralded with enthusiasm and often found wanting over the years.

PRIMARY FIBROSITIS

To the Editor:—*Have cortisone, corticotropin, or similar preparations proved of any value in the treatment of primary fibrositis? The patient I have in mind has had repeated attacks, involving the back, shoulders, neck, scalp, arms, and thighs, that almost always seem to be related to acute upper respiratory tract infections and that last weeks or months, with complete recovery. There has been no involvement of joints or periarticular fibrous tissues. Fibrous tissue involved seems to be that having to do with origins and insertions of muscles and at times that investing the muscles.* *L. O. Weldon, M.D., San Francisco.*

Answer.—Considerable controversy continues to be centered about primary fibrositis. Most persons now feel that such muscle, tendon, and fascial pains are, in many instances, related to emotional tension. This concept is not, however, accepted by everyone. There is almost complete agreement, nevertheless, that in such self-limited afflictions of a mild nature, cortisone or corticotropin should not be used because of the hazards attendant on their use. Pain relief has been noted in many instances following administration of one of these hormones in this type of situation, but the dangers of these hormones far outweigh the benefit. Most authorities favor the use of supportive measures such as heat, salicylates, and an attempt to uncover and treat by reassurance the emotional factors involved.

ENUCLEATION OF THE EYE

To the Editor:—*In Queries and Minor Notes in* The Journal, *Jan. 16, page 288, the answer to an inquiry about clamping the optic nerve with a hemostat before enucleation states that this helps greatly to reduce hemorrhage. This answer promotes the popular misconception that the hemorrhage following enucleation is due to severing the central retinal artery, which runs in the optic nerve. This vessel is only slightly larger than an arteriole and hardly visible to the naked eye; however, when seen with the ophthalmoscope, it is magnified 15 times. Profuse hemorrhage following removal of the globe is due to damage to the larger branches of the ophthalmic artery in the orbit. A clamp on the optic nerve includes the ciliary arteries entering the sclera, but these are also too small to produce significant hemorrhage. When the large orbital vessels are avoided, the clamp has no value.*

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HERPES ZOSTER

To the Editor:—*I note in* The Journal, *Dec. 12, 1953, page 1415, the answer to a question regarding herpes zoster. The answer fails to mention a very important treatment, namely, ganglionic blocking agents such as methantheline (Banthine). I would refer you to a report by Brown, Reekie, and Sinclair in* Northwest Medicine, *June, 1951, page 432, on this subject and would like others to try the medication.*

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